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A CHILTON  PUBLICATION

AUGUST 1958



# NEW FRUEHAUF LIFETIME STAINLESS!

*Torture Tested! Profit Proven! Economy Engineered!*

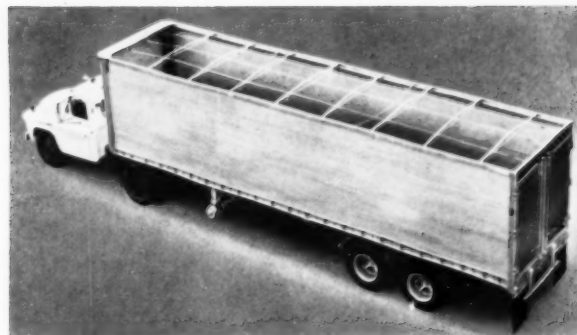


- **Lifetime Materials!**  
Corrosion-resistant stainless steel
- **High Cube Design!**  
Compactly built sidewalls and roof
- **Tough Construction!**  
Permanently welded horizontal corrugations
- **Dazzling Appearance!**  
Mirror smooth nose, glistening side lines

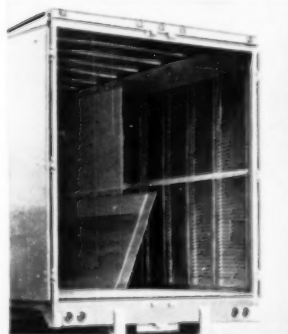
*It's Not Just Improved...It's Totally New  
...For The Ultimate In Quality  
From Road To Roof!*



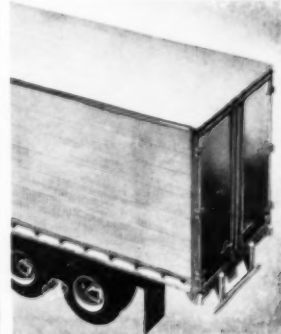
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**FRUEHAUF TRAILER COMPANY**  
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Full line of straight and drop-frame vans, reefers, and open tops.



Rugged sidewall construction that permits fast, easy repairs.

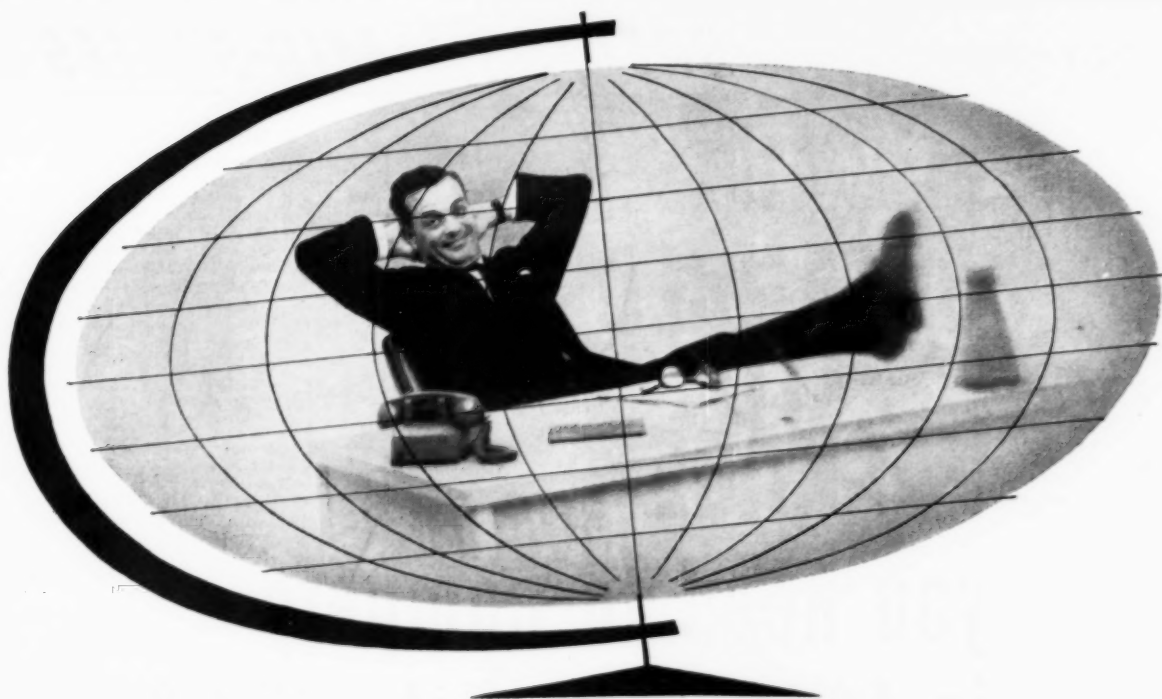


Strong new roof with rigid integral ribs, hat shaped bows.

**FOR FORTY-FOUR YEARS—MORE FRUEHAUF TRAILERS ON THE ROAD THAN ANY OTHER MAKE!**

Circle No. 1 on Card, Facing Page 49, for more information





## ***Not a shipping care in the whole wide world***

Experts follow through for you —  
another bonus of the new **Pan Am Profit Lift**

Your shipping cares "take flight" when you send your goods by Pan Am.

The world's most experienced air cargo carrier handles 71% more overseas cargo than any other airline.

"Your goods will receive expert service all the way." From shipper to consignee, Pan Am *keeps track* of your shipment!

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## **PAN AM CLIPPER CARGO**

**FASTEST DELIVERY TO ALL THE WORLD**



\*Trade Mark, Reg. U. S. Pat. Off.

AUGUST 1958

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**NOW, THE  
BALANCED  
LTL  
PACKAGE**

**you need to compete  
in today's market**

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more than 20,000 industrial and commercial markets.*



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FREE PICK-UP  
ON ANY SIZE SHIPMENT



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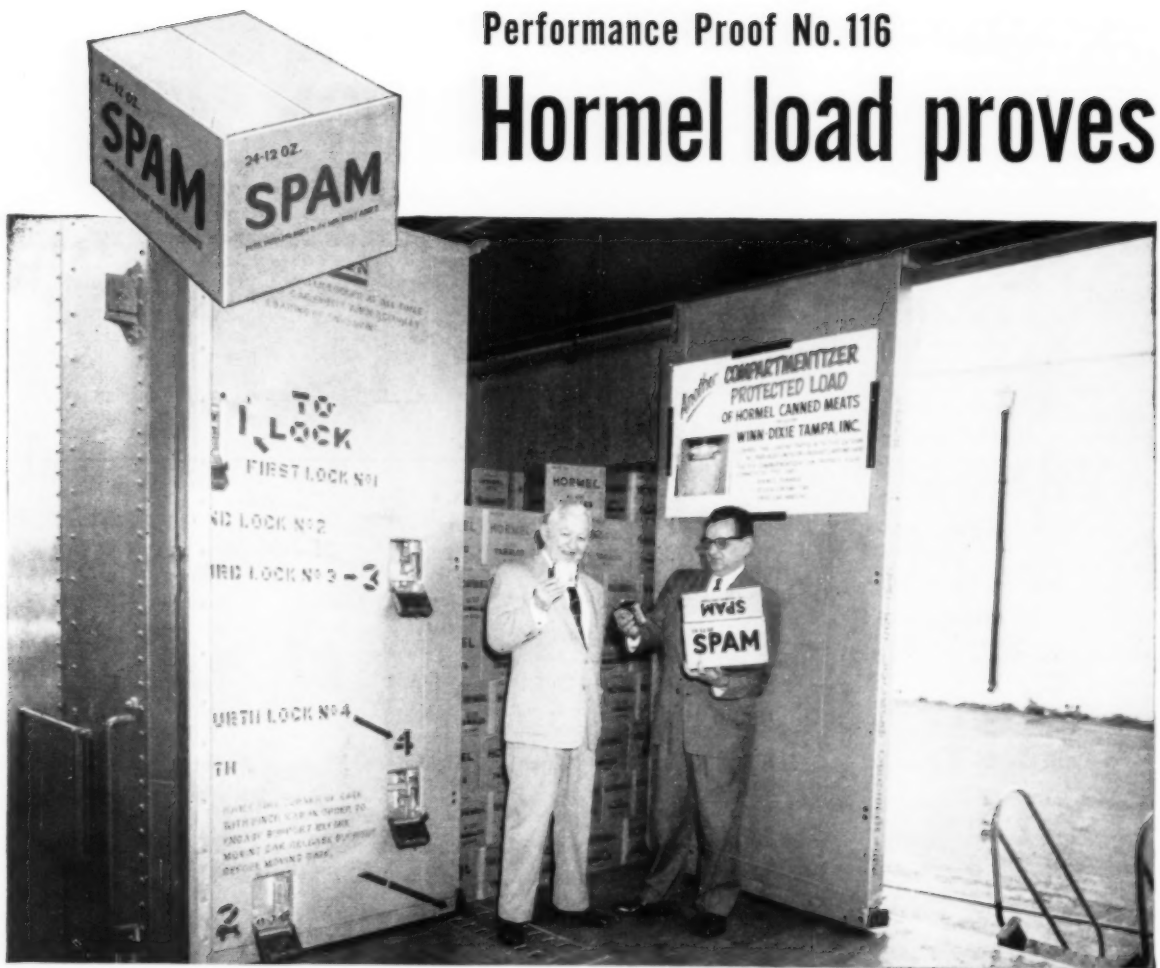
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Performance Proof No.116

# Hormel load proves



**Arrival**—In Tampa, B. M. Angell, (left) chairman of the Canned Goods Shippers Assn., and J. R. King, vice-president of Winn-Dixie Tampa, Inc., inspect the shipment of Hormel canned meats and note its completely claim-free condition.



**Arrival**—Members of the Canned Goods Shippers Association—visited Compartmentizer-equipped Milwaukee car No. 8876 and its load after its 1,718 mile journey. This inspection revealed important shipper-consignee benefits: positive lading security, improved load-unload efficiency and the flexibility to handle all types of loads.



**Loading**—All loading operations—and unloading, too—are made more efficient in Compartmentizer-equipped box cars. Lift trucks, for example, move right into the car, position loads where needed. No jackstraw pile of special parts here . . . Compartmentizer gates stand flush against the side wall . . . car is always clear.



**First Stop**—Unloading at Hormel's Tampa Warehouse was quick and economical. No time wasted ripping out extra bracing and blocking, no car cleaning and no leveling and rebracing the remaining load. Compartmentizer Gates do the whole job . . . provide complete security, total load segregation without expensive extra effort.



# Compartmentizer protection at Tampa shipper meeting

The Compartmentizer-protected load of Hormel products displayed at the Canned Goods Shippers Association meeting was just a routine stop-off shipment. Hormel's Austin, Minnesota plant routed it Milwaukee, I.H.B., I.C., A.C.L. and S.A.L. to their Tampa customer, Winn-Dixie, Inc., and to the Hormel Tampa warehouse. And there was nothing unusual, Winn-Dixie reports, about receiving a load in this *completely claim-free condition* when it's shipped in a Compartmentizer-equipped box car.

But to the traffic executives attending the show, the results were far from routine. It

was a startling shipping demonstration. No damage claims to file. No costly, special bracing or blocking to install or remove. No wrestling with a pile of heavy, awkward parts. Obvious, too, was the fact that here would be a pleased consignee. A consignee who would save dollars in unloading time and would have a "full order" ready for immediate shelf display and sale.

For detailed information on the many shipping advantages you gain through the use of P-S Compartmentizer-equipped box cars, write to Pullman-Standard. You'll get an immediate reply.

## PULLMAN - STANDARD

CAR MANUFACTURING COMPANY

SUBSIDIARY OF PULLMAN INCORPORATED

200 SOUTH MICHIGAN AVENUE, CHICAGO 4, ILLINOIS  
BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO



**Second Stop**—Unloading a Compartmentizer-equipped car is an easy, one man job. Gates swing smoothly to open position—no two or three man crew is needed to manhandle heavy, awkward parts. And the Compartmentizer separates loads by product, carton size or consignee . . . handles car load, LCL, stop-off or pool car shipments.

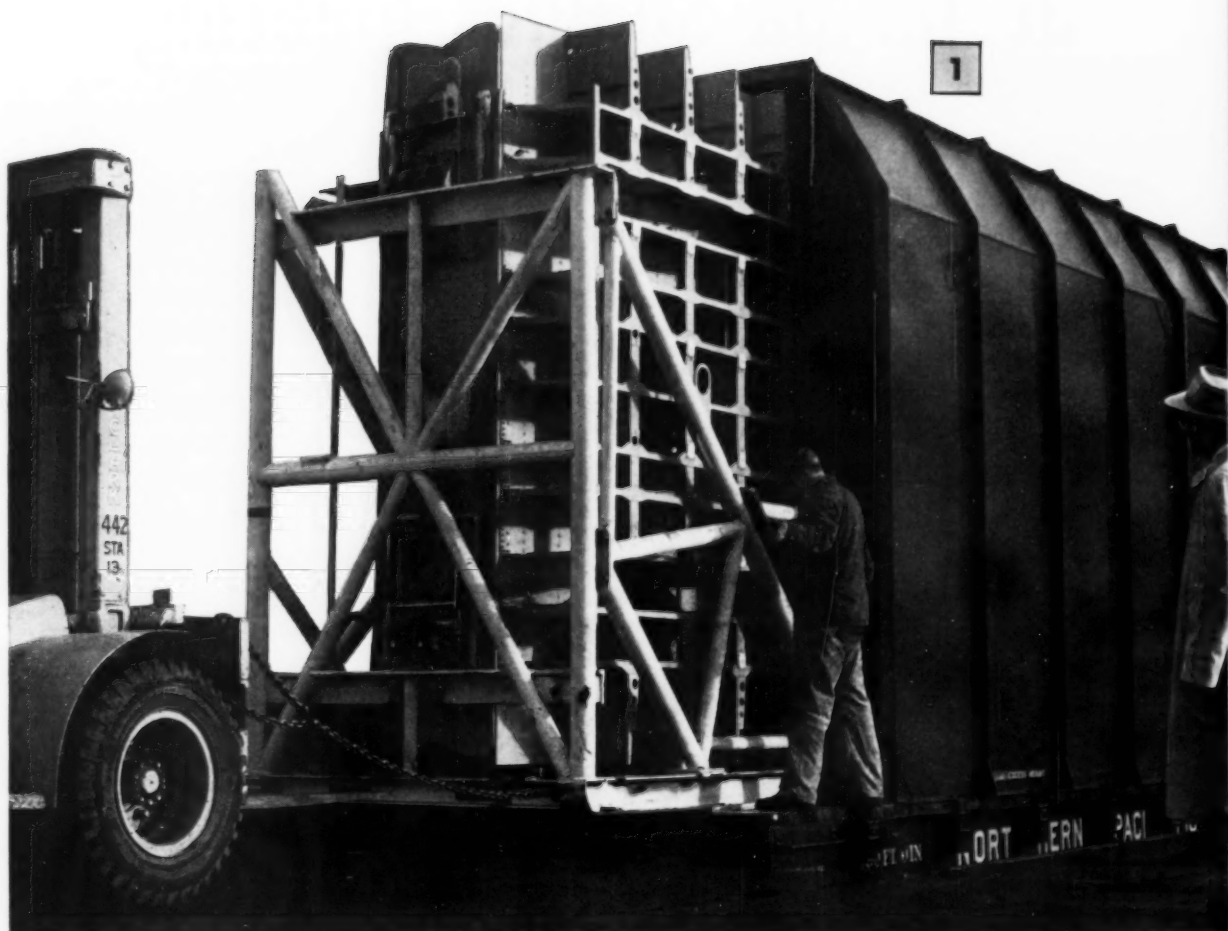
**These shipper-conscious carriers  
have P-S Compartmentizers in  
service or on order to serve you . . .**

|                                      |                            |
|--------------------------------------|----------------------------|
| Baltimore & Ohio                     | Minneapolis &<br>St. Louis |
| Central of Georgia                   | New York Central           |
| Chicago, Burlington &<br>Quincy      | Northern Pacific           |
| Chicago Great<br>Western             | Pennsylvania               |
| Fruit Growers Express                | Seaboard Air Line          |
| Great Northern                       | Southern Pacific           |
| Merchants Despatch<br>Transportation | St. Louis<br>Southwestern  |
| Milwaukee Road                       | Texas & Pacific            |
|                                      | Western Pacific            |

**Ask for them by name . . .**

**Compartmentizer-equipped box cars**

Circle No. 2 on Card, Facing Page 49, for more information



**1 FREIGHT CAR TAKES WINGS!** Northern Pacific's custom-built "canopy" cars are probably the tallest freight cars in operation. Designed by NP to Boeing Aircraft Company requirements, each car holds two mammoth wing sections for America's first jet transport, on their trip from Ohio to Washington State. NP is always prepared to offer special service, special equipment for shippers with special problems.

**2 START OF A GROWING BUSINESS.** Phosphate rock is loaded into gondolas in Western Montana for a long ride to Trail, British Columbia,

where the rock will be made into chemical fertilizers. To link Montana Phosphates Products Company with the main line to Consolidated Mining and Smelting Co. of Canada Ltd., NP has built a 4.7 mile rail spur, a 390-ft. bridge, and will soon haul about 400,000 tons of raw phosphate rock annually.

**3 NEW WAY TO MAKE A BED**—a road bed, that is! NP pioneered this labor-saving method of track ballasting in which track and ties are "humped" over the top of a sled, drawn by a locomotive. Streamlined technique helps NP build smoother beds for damage-free freight delivery.

# NORTHERN PACIFIC—



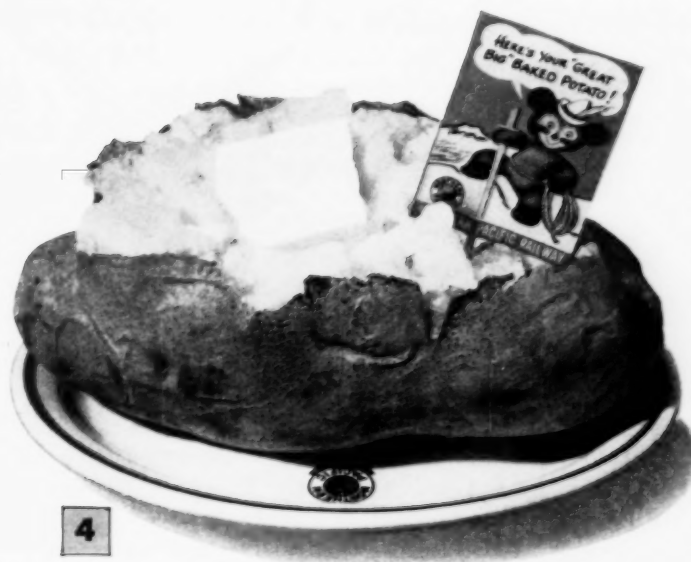
2



3



4



**4** **SOME SPUD!** It's one of NP's hand-selected "Great Big Baked Potatoes", gourmet's favorite on NP dining cars. NP serves 'em . . . and *ships* 'em. This month the railroad begins to haul another huge crop of early potatoes from Yakima Valley and Columbia River Basin, pampering them in the cool comfort of its modern refrigerator fleet.

Do you have a shipping problem? Are you looking for a choice industrial site? Chances are we can help you. For a quick reply, just call your local NP traffic representative or write Otto Kopp, Vice President-Traffic, Northern Pacific Railway, St. Paul 1, Minnesota.



**really terrific!**

When it's tool-up time in Detroit—

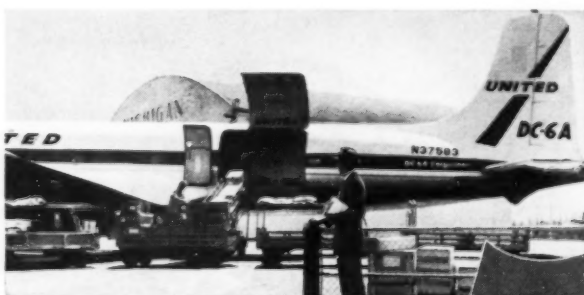
**"UNITED AIR LINES AIR FREIGHT  
GIVES US A HEADSTART  
ON NEXT YEAR'S MODEL"**

— E. D. HEILBRUN, Director of Traffic  
The Budd Company, Philadelphia, Pa.



"When Detroit agrees on final changes for next year's cars, our two Philadelphia plants move with all possible speed on jigs and dies. United fits

right into the speed picture. They always have space to Detroit for us when we need it. And they use kid gloves in handling our shipments!"



WALTER BOYD, United's cargo representative, watches the shipment land at Willow Run—on time. You find this dependability throughout United. People go out of their way to give each shipment personal attention.



#### UNITED AIR FREIGHT RATES ARE LOW

|                                       | per 100 pounds* |
|---------------------------------------|-----------------|
| PHILADELPHIA to DETROIT . . . . .     | \$ 6.05         |
| CHICAGO to SALT LAKE CITY . . . . .   | \$13.65         |
| DENVER to NEW YORK . . . . .          | \$17.70         |
| SAN FRANCISCO to SOUTH BEND . . . . . | \$21.05         |
| AKRON to SEATTLE . . . . .            | \$22.50         |

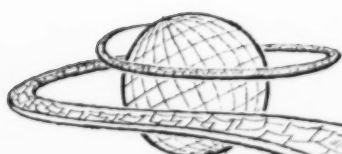
\* These are the rates for many commodities. They are often lower for larger shipments. Rates shown are for information only, are subject to change, and do not include the 3% federal tax on domestic shipments.

LOW RATES are only part of the story. United's speed and 80-market coverage on both passenger and all-cargo planes offer distinct competitive advantages.

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**CHUTING THE**

# NEWS

## Four Point Plan Introduced At Pallet Industry Meeting

The National Wooden Pallet Manufacturers Assn. recently held its Annual Meeting in Asheville, N. C.

Members and their guests were told that the wooden pallet industry has experienced a sharp downtrend during the first six months of this year. Pallet production west of the Rockies has not followed this trend even though producers in other sections have found business slow.

NWPMA has approved a "4-Point Pallet Program" which will establish new pallet grades to include all qualities of pallets; offer a specification analyzation service to customers; encourage buyers to make pre-award surveys of pallet mills on medium or larger orders; and initiate an inspection procedure for fair and equitable adjustments to both customer and supplier for non-compliance with specifications or grade.

The Association, in cooperation with the New York State College of Forestry, will sponsor the Second Annual Pallet Conference at Syracuse, N. Y., September 9-11.

## Carrier Conference Date Set

Sidney Alterman, chairman of the Refrigerated Carriers Committee of the Common Carrier Conference-Irregular Route has announced that the Technical Conference for Refrigerated Motor Carriers will be held at Michigan State University, East Lansing, Mich., August 24-28.

## Opposition of Two Groups to Proposed Seaway Tolls Announced As New Waterway Goes into Service

While dedication ceremonies were being held and the St. Lawrence Seaway was registering first-week traffic of 263 ships, both sides in the controversial toll issue made plans for the August 6 hearings.

Two groups have announced their opposition to the proposed tolls suggested by the St. Lawrence Seaway Development Corp. on June 12. George

H. Fallon, Maryland congressman and chairman of the National Committee for a Non-Subsidized Seaway, said that the tolls will be opposed by a group of Atlantic and Gulf ports and businessmen. Fallon claims that present toll proposals do not insure meeting of the requirements set by law.

A second opponent is the Association of American Railroads. The AAR also expressed serious doubt that the project would be self liquidating. It called for initial tolls set high enough to meet this self-liquidating requirement.

Meanwhile, Maritime Administrator Clarence G. Morse announced the completion of an "Engineering Study of the Effects of the Opening of the St. Lawrence Seaway on the Shipping Industry." The study is divided into five parts: Vessel design, effects on existing Great Lakes shipping, the ship replacement problem, operational problems, and expected Seaway trade.

Another recent development in Seaway management was the President's assigning to the Secretary of Commerce and the Secretary of Defense the duty of directing and supervising the Seaway. The Commerce Secretary will be responsible for all management except that dealing with construction.

(Please Turn Page)

—DA—

*The first phase of a merger study involving the Erie Railroad, the Delaware, Lackawanna & Western Railroad, and the Delaware & Hudson Railroad has been completed with the submission of a 150-page report to the president of each company.*

—DA—

## Packaging Institute, SIPMHE Plan Cooperative Program

The Packaging Institute and the Society of Industrial Packaging and Materials Handling Engineers, both planning shows in Chicago in the fall, will hold a cooperative program on October 15.

The Institute's 20th Annual Forum will be in the Edgewater Beach Hotel, SIPMHE's Exposition will be at the Coliseum.

The SIPMHE "Get Acquainted Party" will be held October 13 and the Exposition will be open on the night of October 15. The P.I. Forum will end after lunch on October 15. These program changes make possible the joint technical session at the Coliseum.

## Chuting the News . . .

(Continued from Preceding Page)

### Standards to Aid Fork-Lift Loading of Highway Trailers Proposed at Annual Meeting of TTMA

A plan to set safe gross weight capacities of highway trailers for fork lift loading was created at the Annual Meeting of the Truck Trailer Manufacturers Association.

Under the plan, all trailer manufacturers will test and rate the capacity of each type of floor construction. The ratings will go to the TTMA which will combine them in a uniform chart of ratings according to floor type.

Containerization was another subject to come under TTMA review. The panel discussing this subject consisted of Keith W. Tantlinger, vice president-engineering, Fruehauf Trailer Co.; Gen. E. C. R. Lasher, president, North American Car Corp.; C. E. P. Smith, formerly of Electro-Motive Division, General Motors; and Maj. Harold A. Ablett, Royal Engineers, British Army.

Tantlinger spoke on the Pan Atlantic Steamship Corp. operation, which separates van bodies from highway trailers for transit by sea. He said that mechanized loading requires only 1/5 as many longshoremen.

Lasher set two goals in containerization—a uniform container and a completely integrated transportation system. A container load, Lasher said, should be able to move by any mode of transportation to any place in the world on one bill of lading.

Smith, citing figures of a recent survey, said that trailer manufacturers are the logical people to make containers.

Ablett called on private industry and the military to get together now to work out a uniform container size program.

*The National Classification Committee of the National Motor Freight Traffic Association has elected 98 members for 1958-59. Run-off elections are scheduled to break ties in Ohio and Minnesota.*

### News Briefs

Pan-Atlantic Steamship Corp., New York, begins regular weekly Trailer-ship service to Puerto Rico.

The Union Pacific Railroad has been awarded the Public Safety Activities Award by the National Safety Council.

Monon Railroad has announced joint, through trailer-on-flat-car service with the Louisville & Nashville Railroad, between the Chicago, Ill., commercial zone area (including Lowell, Ind.) and Birmingham, Ala., Memphis and Nashville, Tenn., and New Orleans, La.

An 11 per cent drop in barge tonnage, barge loadings, and in gross freight revenue for May, 1958, compared with the same period in 1957, has been reported by the Inland Waterways Common Carriers Assn.

The charge that competitors of the railroads "pay little or nothing" for the use of highway and other facilities has been deleted from the report of the Smathers' subcommittee which has recently concluded hearings on problems of the railroad industry, according to The National Highway Users Conference.

The New York Central Railroad announces expansion of its Flexi-Van service to include Albany, Troy, and Schenectady, N. Y.; Joliet and Kankakee, Ill.; and Michigan City, Ind.

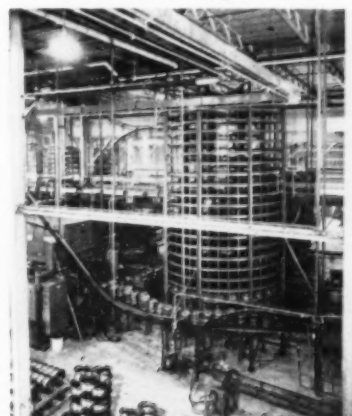
Eaton Manufacturing Co., Cleveland, Ohio, announces its proposed acquisition of Fuller Manufacturing Co., Kalamazoo, Mich. The proposal will be submitted to the shareholders of both companies on July 30.

Palm Beach County Freight Traffic Bureau, sponsored by the Joint Co-operative Committee of West Palm Beach, has begun a private traffic consultant service.

The American Trucking Associations Foundation has received a \$50,000 grant from the White Motor Co., Cleveland, Ohio, to be used for a public relations program in the fall.

The Chesapeake and Ohio Railway has been chosen by the National Safety Council to receive a Public Safety Activities Award for 1957.

### Vertical Storage Unit



Motor Wheel Corporation's new plant at Newark, N. J., includes a new vertical storage unit capable of handling 1000 rims and 2000 drums. The unit is filled from top and parts are gravity fed to the production line.

### Congress Enacts Rail Bill With \$500-Million Loan Plan

Approved by both houses of Congress within a few hours, the Transportation Act of 1958, the Federal government's answer to the ailments of railroads, now waits the President's signature.

The new legislation permits loan guarantees to hard-pressed railroads when private loans are not available at reasonable interest charges. The guarantees cannot exceed \$500-million. Loans so insured must be used for capital expenditures or operations. When loans are used for operating costs, no dividends can be paid until the loan is repaid.

Other provisions will tighten up on agricultural exemptions, increase ICC power in permitting the discontinuance of interstate trains, and give the railroads greater freedom in cutting rates.

Daniel P. Loomis, president of the Association of American Railroads, praised the measure but warned that it is not a solution of all or even the most serious common carrier problems.

The need for further action, Loomis said, is recognized in a companion measure, Senate Resolution 303, which authorizes the appointment of three transportation experts to conduct a continuing study.

## ACW, Inc. Presents Award



The American Chain of Warehouses, Inc. presented a silver tray to John W. Terreforte, (center) executive secretary and eastern manager of the ACW, in recognition of 25 years of service. Robert C. Greeley, (right) past president, made the presentation while President S. M. Haslett, Jr. (left) looked on.

## U.S. Repeals 3 Per Cent Excise Tax on Freight And Taxes on Coal, Oil, Gas Transportation

Freight costs for U. S. shippers dropped August 1 when the repeal of the 3 per cent federal excise tax became effective.

The repeal was enacted by Congress as part of a bill extending for one year the existing corporation income tax rates and several other excise taxes. The latter included a 10 per cent tax on passenger transportation.

Shippers during 1957, the last full year of the tax, paid \$468-million.

In addition to repeal of the general freight tax, the four cent per ton tax on the transportation of coal and a 4½ per cent tax on pipeline transportation of oil and gas also were repealed.

Carriers need not collect the tax on freight charges paid on or after August 1 even though the service commenced prior to that date.

—DA—

## ARI Standards Progressing

The Air-Conditioning and Refrigeration Institute Standard for testing and rating truck and truck-trailer refrigerating equipment is expected to be completed by early fall.

George S. Jones Jr., managing director of the ARI, announced recently that the standards have progressed through several drafts.

## AST&T Announces Outcome Of Semi-Annual Examinations

A total of 453 registrants completed 542 examinations in the semi-annual series of the American Society of Traffic and Transportation.

All of the papers are now in the hands of the graders. As soon as the graders report to the registrar, those taking part in the tests will be informed of results.

—DA—

*The Cartage Council of the Airline Ground Transportation Association, meeting with airline representatives, has launched a program to exchange and develop ideas on ground handling. High on the agenda are problems of gearing ground transportation to the demands of jet freight.*

## Legislative Line-Up

*Following is a brief summary of legislative items pending in Washington. The status reported is as of July 17.*

**ALASKA ROUTES**—Bills to continue operation of the Alaska International Rail and Highway Commission await floor action in House and Senate. Chances are good for passage of these measures, S. 2933 and H. R. 9856. The Commission would be kept at work until February 1, 1960.

**FOREIGN FREIGHT FORWARDERS**—The House Merchant Marine Committee failed to report H. R. 479 and related bills dealing with ocean freight forwarders.

**GOVERNMENT COMPETITION**—No progress is made by House Government Operations subcommittee on H. R. 1975 and similar bills. These would define federal policy as to government competition with private business.

**HIGHWAY ACT AMENDMENT**—Hearings were held late in July on H. R. 12808, which would amend the Federal-Aid Highway Act of 1958. The proposal would make the estimates of cost for completing the Interstate System in each state the basis for future fund apportionments.

**STEAMSHIP RATES**—Congress is likely to protect dual rate systems for steamship conferences until mid-1960. S. 3916, passed by the Senate, and H. R. 12751, approved by House Merchant Marine Committee, would keep the rates legal temporarily.

**TERMINAL TRAFFIC**—House Merchant Marine Committee issued an interim report on H. R. 2229, but did not report the bill out of committee. The measure would channel more government freight through commercial marine terminals.

**TRANSPORTATION OF EXPLOSIVES**—Still awaiting action in House Commerce Committee is S. 1491, to amend the Transportation of Explosives Act.

**MAIL TRANSPORT**—S. 3960, dealing with mail transportation services by motor vehicles, remains before Senate Post Office Committee.

—DA—

*The National Small Shipments Traffic Conference, Inc., will hold its annual meeting on October 7, 8, and 9, at the Congress Hotel in Chicago.*

*(Please Turn Page)*

# Chuting the News . . .

(Continued from Preceding Page)

## ATA Freight Claim Council Elects Dennis Chairman; Awards Three First Prizes to N.C. Truck Lines

W. L. Dennis, of Johnson City, Tenn., was elected chairman of the National Freight Claim Council, ATA, at the organization's recent Annual Meeting in Denver, Colo.

Other officers are John V. Lund, Akron, Ohio, first vice chairman, and Grant D. Nelson, Denver, second vice chairman.

During the meetings, three Charlotte, N. C., companies were awarded first prizes in the Annual National Claim Prevention Contest. Johnson Motor Lines, Inc., was awarded first place in Class A while Miller Motor Express, Inc., took first prize in Class B. The Fredrickson Motor Express Corp. won the top award in Class C.

Workshop sessions were held on four topics. These were: "Motivating Employees, 'Getting that Little Extra Effort'", "Planning and Controlling the Claim Prevention Program," "Organizing and Designing Effective Claim Prevention Material," and "Claim Liability, Investigation and Processing."

—DA—

*Standard pictures to indicate special handling instructions are now under consideration. An American Standards Association - authorized committee is studying these markings for non-dangerous goods.*

—DA—

## Harry V. Duffy, Vice President, Director of Chilton Co., Dies

Harry V. Duffy, vice president, director, and head of the Printing Division of the Chilton Co., publisher of DISTRIBUTION AGE, died Saturday, July 19, after a short illness. He was 60. Duffy had been with Chilton and its predecessors since 1912. He rose through the ranks of the Printing Division. Widely respected in the printing industry, he was one of the original members of the Printing Industries of America Associates and a founder of the Printing Industries of Philadelphia.

*National Truck Leasing System will hold its annual meeting in Chicago, Ill., September 8-11, at the Blackstone-Sheraton Hotel.*

—DA—

## Post Office Experimenting with Flexi-Van for Carrying Mail

The Post Office Department has started experiments with a new form of combination highway-rail service for transporting mail.

For an eight-month test period, the department is using Flexi-Van for shipments of mail between Chicago and Detroit. Flexi-Van is a service developed by the New York Central Railroad and the Freuhauf Trailer Co. The detachable van bodies will be used on shipments to intermediate points as well as to the two terminals.

"By the Flexi-Van method, a trailer full of mail can be carried by railroad flat car or cargo ship and, by adding its wheel assembly, it can be hauled over the highways as a trailer," Postmaster General Arthur E. Summerfield explained.

In the initial phase of the experiment, the Post Office will use six flat cars and twelve trailer vans on New York Central passenger trains. Tractor-trailer service on the highway will be provided by the New York Central Transport Co.

—DA—

*The annual meeting of the Southern Traffic League, Inc. will be held September 9, at the Patten Hotel in Chattanooga, Tenn.*

## Club Briefs

The Susquehanna chapter of the National Defense Transportation Assn. announces the installation of Col. C. C. Albaugh as president; Russell R. Fells, first vice president; Harold T. Griffith, second vice president; William R. Gallagher, third vice president; Charles P. Smith, treasurer; and Harold R. Zimmerman, secretary.

The Ohio Carriers Assn., Inc. announces the election of Nick Strimbu, president; George E. Harvey, vice president; Herbert L. Clemans, secretary; E. R. McCleery, treasurer; and Ralph W. Sanborn, general counsel. L. C. Spademan, Jr. was elected president of the Detroit Shippers Co-Operative Assn. Martin M. Haas, vice president; Robert M. Cowdin, executive secretary; and Gerald Davidson, treasurer.

The Traffic Club of Denver, Col., will observe its ninth annual Colorado Transportation Day, August 21.

Mr. Grant Moran, general traffic manager, Western Auto Supply Co., was presented Kansas City's first "Transportation Man of the Year" award by the Transportation Club of Kansas City, Mo.

A program of eight meetings has been announced by the American Materials Handling Society, Northern California Chapter, San Francisco. Hoist and electric cranes will be discussed at the first meeting on September 4.

The Bendix Aviation Corp. Traffic Committee recently held a two day meeting at the company's Hamilton Div., Hamilton, Ohio. R. L. Hamilton of that division acted as host.

The Traffic Club of Chicago is accepting applications for the club's 1958 scholarship awards. Applicants must be sponsored by club members.

—DA—

## F. Donald Bateman, President, AWA Merchandise Div., Dies

F. Donald Bateman, president of the Merchandise Division of the American Warehousemen's Association, died July 23 at the age of 57. His death was caused by a brain tumor. Bateman was president of Griswold & Bateman Warehouse Co., Chicago; past president of the Illinois Association of Merchandise Warehousemen; and secretary-treasurer of Allied Distribution, Inc. He had served the AWA in many capacities prior to his election to the presidency of the Merchandise Division at the 68th Annual Meeting in March of this year.

(Please Turn to Page 16)





# Special Shipping Problems?

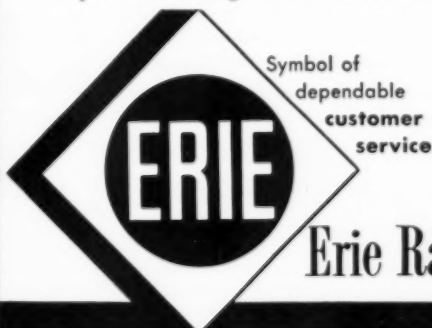
## TRY ERIE'S SPECIAL EQUIPMENT

An important aspect of the complete **customer service** provided by your local Erie representative is assistance in analyzing the requirements of your shipments. And where your shipment can be handled more economically or more safely with special Erie equipment, he'll recommend it.

Erie customers regularly profit by using Erie covered hopper cars, heavy duty flat cars, special covered gondolas for coiled sheet steel

and tin plate, various types of D-F cars, and Piggy-Back equipment. In fact, Erie's close **customer service** has resulted in the very development of much of this equipment.

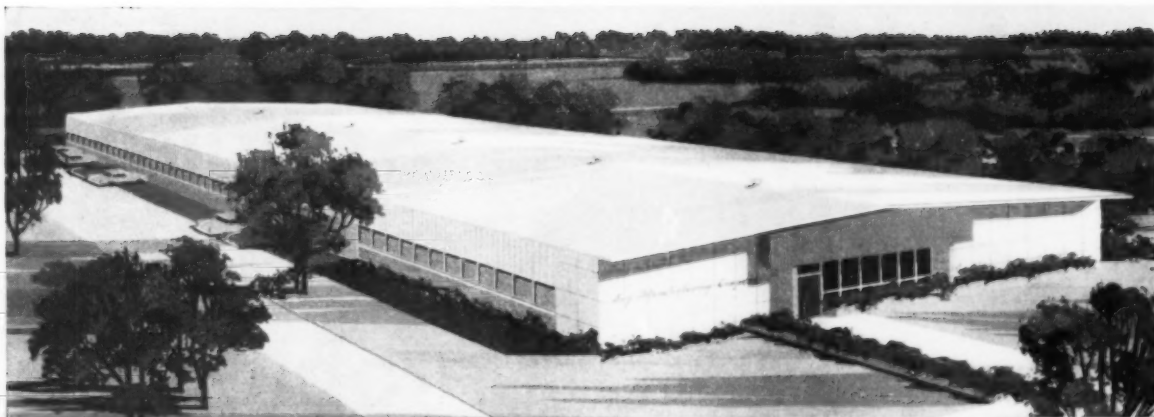
When you specify, "Route it Erie", you'll see exactly what Erie **customer service** means to you. It's our way of running a railroad—of matching all Erie operations to your particular needs for more dependable delivery of your shipments.



**Erie Railroad**



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## A SYSTEM OF BUILDING THAT MAKES SENSE IN A TIGHT MONEY MARKET

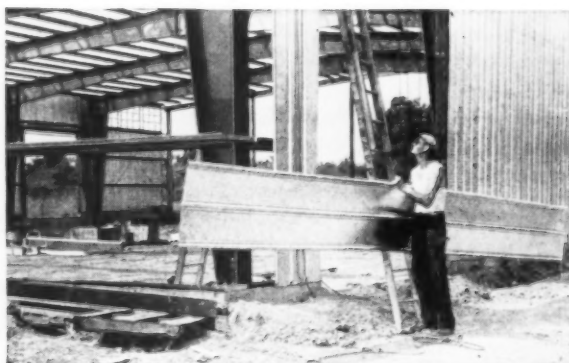
Does your company need a new factory or warehouse or other new construction to take advantage of recent market developments? Are you hesitating to expand because of high costs of capital and construction?

Many companies who have been faced with this same dilemma found that the Butler System of building offered economies sufficient to offset high interest rates . . . high building costs.

By combining mass-production techniques with modern engineering and building principles, this unique system effects *significant savings* in both time and money over traditional construction methods.

Routine engineering time is minimized because the structural frame and all components are pre-engineered. Building costs are reduced because the precision parts assemble quickly, without modification. Weeks, even months of planning and erection time are eliminated.

There is no need to waste precious capital overbuilding at the present in anticipation of future requirements. A Butler building can be quickly and economically expanded whenever required, because it is made of completely standardized parts.



Contact your Butler Builder. He can show you how these and many other advantages of Butler buildings can help you develop a realistic, standardized building program. Then . . . when you need a new factory, or want to expand an existing plant, you can virtually order it by phone . . . like any other standard tool. Your Butler Builder is listed in the Yellow Pages of your telephone directory under "Buildings" or "Steel Buildings." Or write direct.



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"Overcharges on our freight bills? Impossible!" you say. Well—you'd be amazed to know how many companies, large and small, unknowingly paid excessive freight costs. The carriers didn't do it intentionally . . . but it happened because of hurried classifications, unfamiliar personnel and category confusion for new products.

Our business is to find these overcharges . . . prove the claim . . . and recover this money which is rightfully yours. Our service is effective—almost \$1,000,000.00 has been recovered for our clients to date.

IT COSTS YOU NOTHING to find out if we can recover overcharges for you! Just send us your freight bills for the past two years and we do the rest!

And . . . there's more to our service than overcharge recovery alone. Once the proper classification of your merchandise is established, it could mean these competitive benefits: 1. Lower shipping costs for you and your distributors. 2. Evading a product price increase by saving on shipping costs. 3. Reducing laid-down costs in spite of proposed rate hikes.

Let us tell you our complete story . . . it costs you nothing . . . but it could uncover many hidden dollars in your old files. Write, wire, phone or mail coupon today . . . NOW!

**HERE IS ALL YOU DO:** It's simple! Just pack up your freight bills for the past two years and send them to us . . .

**WE** will immediately place these bills through our extensive audit. If we find overcharges, these will be filed *in your name*. You receive a statement of all claims filed.

**THERE IS NO CHARGE** for our auditing service. You pay only 50% of the money we actually recover for you!



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 Nationwide Traffic Analysts

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FREIGHT BILL PAYMENT SERVICE • ROUTING SERVICE • RATE SERVICE  
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 RIGHT HAND MAN.

Gentlemen:

I am sending you my freight bills for the past two years. Please audit them and report your findings. There is no cost to me unless you find overcharges. If you do, I understand your charge is 50% of the money you recover.

☐ Please send more information.

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Company \_\_\_\_\_

Address \_\_\_\_\_

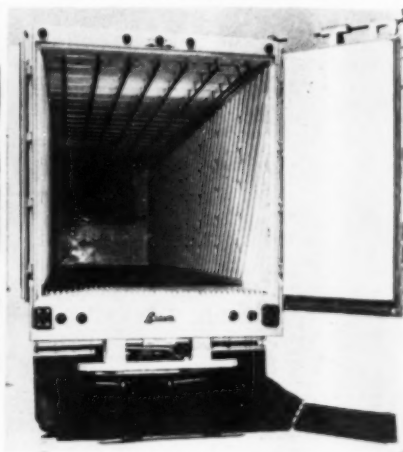
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## Caravan Makes Record Move



International Transport, Inc., recently moved 100 "Payloader" tractor shovels from the Frank G. Hough Co., an International Harvester subsidiary in Libertyville, Ill., to Salt Lake City. Drivers of the record convoy are shown behind Dean Wheaton (left), western sales representative for IT, John W. Jacobs (center), IT general manager; and L. E. Clecher (right), of IT's traffic department

## Trailers Delivered to Carrier



Burlington Truck Lines, Inc., has accepted the first production model of a new refrigerated trailer from the Brown Trailer Div. of the Clark Equipment Co. Brown also has delivered the first of 50 flatbeds

## News . . .

(Continued from Page 12)

### Extension Granted for Filing Statements on Truck Leasing Rule

The deadline for filing statements with the ICC on its proposed truck leasing rule has been extended to September 15.

The proposed revision would permit both common and contract carriers to lease vehicles without drivers to shippers. At present, only contract carriers have this privilege.

### ATC Plans 35th Annual Meeting

The Associated Traffic Clubs of America will hold its 35th Annual Meeting September 30 to October 1 in San Francisco.

A trade show is planned in conjunction with the meeting. The Sheraton-Palace Hotel has been designated as ATC headquarters.

Organization officials report that a record attendance is expected, the group having added 13 new member traffic clubs and 213 new sustaining members in the past year.

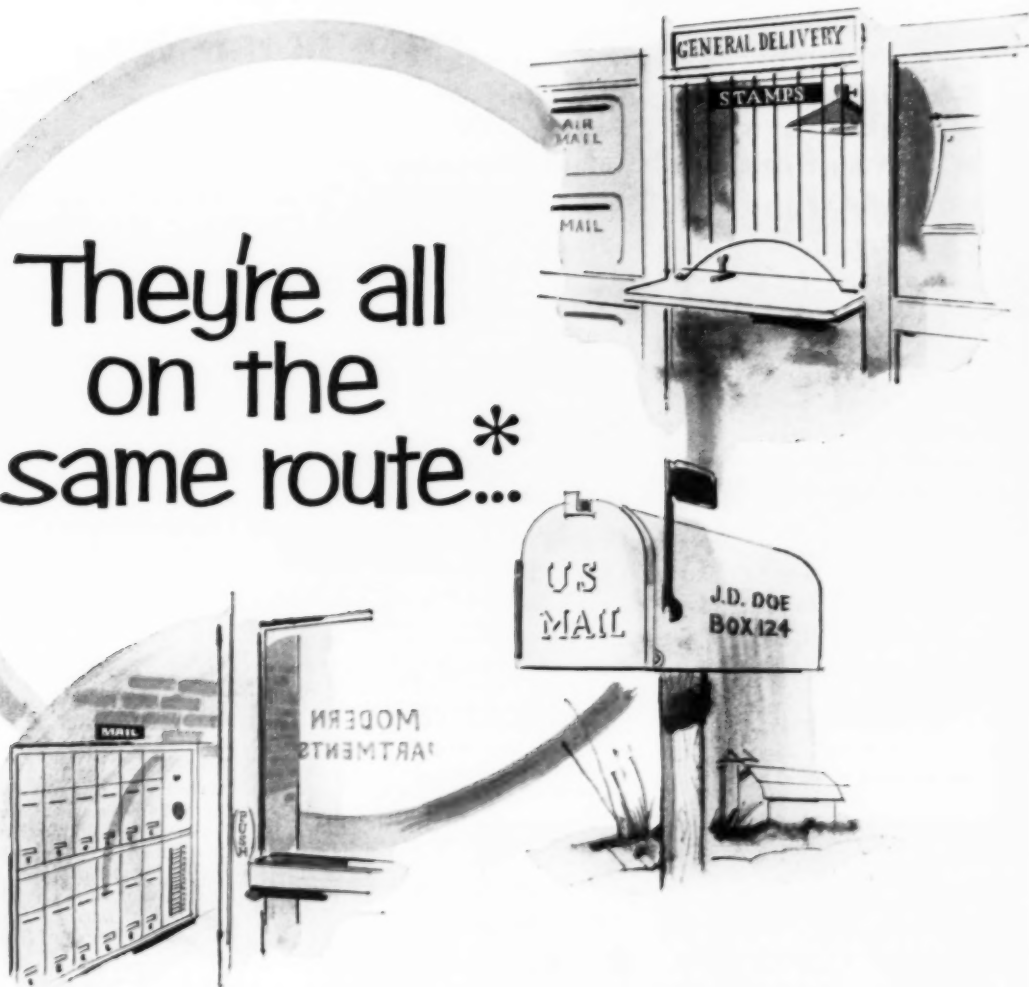
## Coming Events


- Aug. 7-9—National Cartage Associates, Palmer House, Chicago.
- Aug. 11-13—Western Packaging & Material Handling Exposition, Civic Auditorium, San Francisco.
- Aug. 21—California Chapter, The American Society of Traffic & Transportation, Annual Meeting, San Francisco.
- Aug. 24-28—Irregular Route Common Carrier Conference, Technical School for Refrigerated Motor Carriers, Michigan State University.
- Sept. 8-11—National Truck Leasing System, 14th Annual Meeting, Blackstone-Sheraton Hotel, Chicago.
- Sept. 9—Southern Traffic League, Inc., Patten Hotel, Chattanooga, Tenn.
- Sept. 9-10—Air Freight Cartage Conference, Annual Convention, Chicago.
- Sept. 10-11—American Society of Traffic & Transportation, Annual Meeting, Commodore Hotel, New York City.
- Sept. 15-19—Instrument Society of America, 13th Annual Instrument-Automation Conference & Exhibit, Convention Hall, Philadelphia.
- Sept. 17—Southwestern Warehousemen & Movers' Assn., Roosevelt Hotel, New Orleans, La.
- Sept. 22-24—The Materials Handling Institute, Inc., The Greenbrier, White Sulphur Springs, W. Va.
- Sept. 29-30—Associated Traffic Clubs of America, 35th Annual Meeting, Sheraton Palace Hotel, San Francisco.
- Sept. 30-Oct. 2—4th Joint Military-Industry Packaging & Materials Handling Symposium, Washington, D. C.
- Oct. 7-9—National Assn. of Shippers Advisory Boards, Annual Meeting, Pittsburgh.
- Oct. 7-9—National Small Shipments Traffic Conference Inc., Annual Meeting, Congress Hotel, Chicago.
- Oct. 9-10—Southeastern and Southwestern Chapters, National Assn. of Refrigerated

- Warehouses, Joint Meeting, Roosevelt Hotel, New Orleans.
- Oct. 13-15—Packaging Institute, 20th Annual Meeting, Edgewater Beach Hotel, Chicago.
- Oct. 13-16—SIPMHE, National Industrial Packaging, Handling and Shipping Show, Competition and Short Course, Coliseum, Chicago.
- Oct. 15-17—The Propeller Club of the United States and 1958 Merchant Marine Conference, Fairmont Hotel, San Francisco.
- Oct. 15-18—Movers Conference of America, Annual Meeting, Hotel Statler, Washington, D. C.
- Oct. 16-19—Missouri Warehousemen's Assn., Inc., Chase Hotel, St. Louis, Mo.
- Oct. 19-23—New York State Warehousemen's Assn., Inc., The Concord Hotel, Kiamesha Lake, N. Y.
- Oct. 20-24—National Safety Congress and Exposition, 46th Annual Meeting, Chicago, Ill.
- Oct. 25-26—Delta Nu Alpha Transportation Fraternity, Inc., Annual Meeting, Pittsburgh.
- Oct. 26-31—International Road Federation's III World Meeting, Mexico City, Mexico.
- Oct. 27-31—Freight Loss & Damage Prevention Section, AAR, 14th Seminar, AAR Research Center, Chicago.
- Nov. 9-12—National Defense Transportation Assn., Annual Meeting, St. Louis.
- Nov. 16-21—American Trucking Associations, Inc., Annual Convention, Miami Beach.
- Nov. 17-20—National Association of Railroad and Utilities Commissioners, Annual Convention, Phoenix, Ariz.
- Nov. 20-21—National Industrial Traffic League, Annual Meeting, Hotel Commodore, New York City.
- Dec. 10-11—Michigan Movers & Warehousemen's Assn., Fort Shelby Hotel, Detroit.



They're all  
on the  
same route...\*



...in the New America, where the wheels  
that go everywhere   
enable you to live, shop and  
do business wherever you please!

\*"Today 70 percent of our post offices can not be reached directly by train connections."—Postmaster General, before the 1957 Annual Meeting, U. S. Chamber of Commerce.



**AMERICAN TRUCKING INDUSTRY**

American Trucking Associations, Inc., Washington 6, D. C.

**THE SHORTEST DISTANCE BETWEEN TWO POINTS IS A TRUCK LINE**

## To Safeguard Merchandise B&O "babies" your LCL

Think only babies are handled with care? Watch the way B&O will coddle your less-than-carload freight! Route it via B&O Time-Saver and you'll save extra time, but we'll expand extra care to safeguard every shipment. B&O operating and terminal people are specially trained and supervised to "baby" your LCL. They like their competence at it—you'll like their dependable performance.

Ask our man!



## Men in the News

### Traffic

Edward W. Schwadron—appointed manager, transportation and international services section; William G. Brittain—named manager, fiscal control section; James A. Jordon—new manager, transportation research and development section; and Walter J. Keneski, appointed assistant manager, traffic section, Traffic and Transportation Dept., Koppers Co., Pittsburgh, Pa.



W. I. Stewart (left)—appointed general distribution manager, Lever Bros. Co., New York; W. E. Malone (right)—promoted to general traffic manager; Alfred E. Reccard—new traffic manager; Robert W. Mahony—named district traffic manager, Hammond, Ind.; and Russell E. McNeil—promoted to district traffic manager, Los Angeles.



I. Alfred Biondi—appointed director of materials, handling, and distribution, Nopco Chemical Co., Harrison, N. J.

C. Byron Schenck—named general traffic manager, Container Transport International, Inc., New York.

J. R. Munro—promoted to vice president, Caterpillar Tractor Co., Peoria, Ill. His functions will include manufacturing, purchasing and traffic.

G. John Lambillotte—named assistant to general traffic manager, Columbia-Southern Chemical Corp., Pittsburgh, Pa.

Col. David B. Parker—appointed assistant Army chief of transportation for research and development at Washington, D. C.

### Transportation—Air

George Patterson—new president of Independent Airlines Assn., Washington; E. J. Averman—named vice president.

Ward B. Masden—appointed deputy regional administrator for CAA First Regional Office covering Northeastern states.

Maurice B. Westphal—promoted to assistant vice president and general sales manager of Eastern Airlines, New York.

John E. Brady—joins American Airlines, New York, as director of advertising.

Chester M. Mayer—returns as president of Air Express International Corp., New York. Charles L. Gallo—to serve as adviser and Board member.

### —Highway

Chester A. Smith—appointed consultant in consumer relations for National Truck Leasing System, Chicago, Ill. Smith will operate from the New York office.

Joseph Schuhmann—assumes management of Wilson Freight Forwarding Co.'s Northern District; Larry Collins—promoted to terminal manager for Philadelphia; and Art Badgley—becomes terminal manager for Lexington, Ky. Newell Colley—named as Nashville, Tenn., terminal manager.

Stanley M. Christovich—appointed director of operations for Great Southern Trucking Co., Jacksonville, Fla.

Basil Fuller—promoted to Cleveland terminal manager for Spector-Mid-States.

Robert W. Croman—new field service representative for American Trucking Associations, Inc., Washington, assigned to Ohio; John E. Freund—new representative assigned to Pennsylvania; and Robert B. Williams—to serve Alabama, Louisiana, Mississippi, and western Tennessee.

Frank G. Sutherland—promoted to vice president of sales for Ryder System, Inc., Jacksonville, Fla.

Louis F. Manneschildt—appointed assistant vice president of sales, Trailmobile Inc., Cincinnati, Ohio. William H. Gostlin, manager of industrial relations.

Keith W. Tantlinger—elected vice president of engineering for Fruehauf Trailer Co., Detroit, Mich.

Vaughn Spalding—new container products manager, Brown Trailer Div. of Clark Equipment Co., Spokane, Wash.

### —Rail

William F. Henning—appointed Birmingham, Ala., district manager of the Car Service Div., Association of American Railroads.

L. Rene Gaiennie—elected vice president of industrial and public relations, ACF Industries, Inc., New York.

Robert W. Tackbary—named president of Pennsylvania Railroad-owned trucking companies; William H. Mapp—becomes manager of TruTrain service for PRR, Philadelphia.

Robert L. Evans—appointed vice president in charge of engineering, American Car and Foundry Div., ACF Industries, Inc., Berwick, Pa.



Mississippi River, Minneapolis-St. Paul

HOW **DAYSAVER**

**SERVES THE  
UPPER MIDWEST**

**SAMPLE SCHEDULES\***

|               |                 |
|---------------|-----------------|
| Leaves        | Arrives         |
| Minneapolis-  | San Francisco-  |
| St. Paul      | Oakland         |
| <b>MONDAY</b> | <b>THURSDAY</b> |

|               |                |
|---------------|----------------|
| Leaves        | Arrives        |
| Seattle       | Chicago        |
| <b>FRIDAY</b> | <b>TUESDAY</b> |

DAYSaver is Consolidated Freightways' new, *non-stop* motor freight service between the Midwest and the Western states. Daysaver brings the Twin Cities and other important industrial centers of Minnesota and Wisconsin closer to the Pacific Coast *by days*.

whatever your shipping needs, call...

COMPLETE MOTOR TRANSPORTATION SERVICE

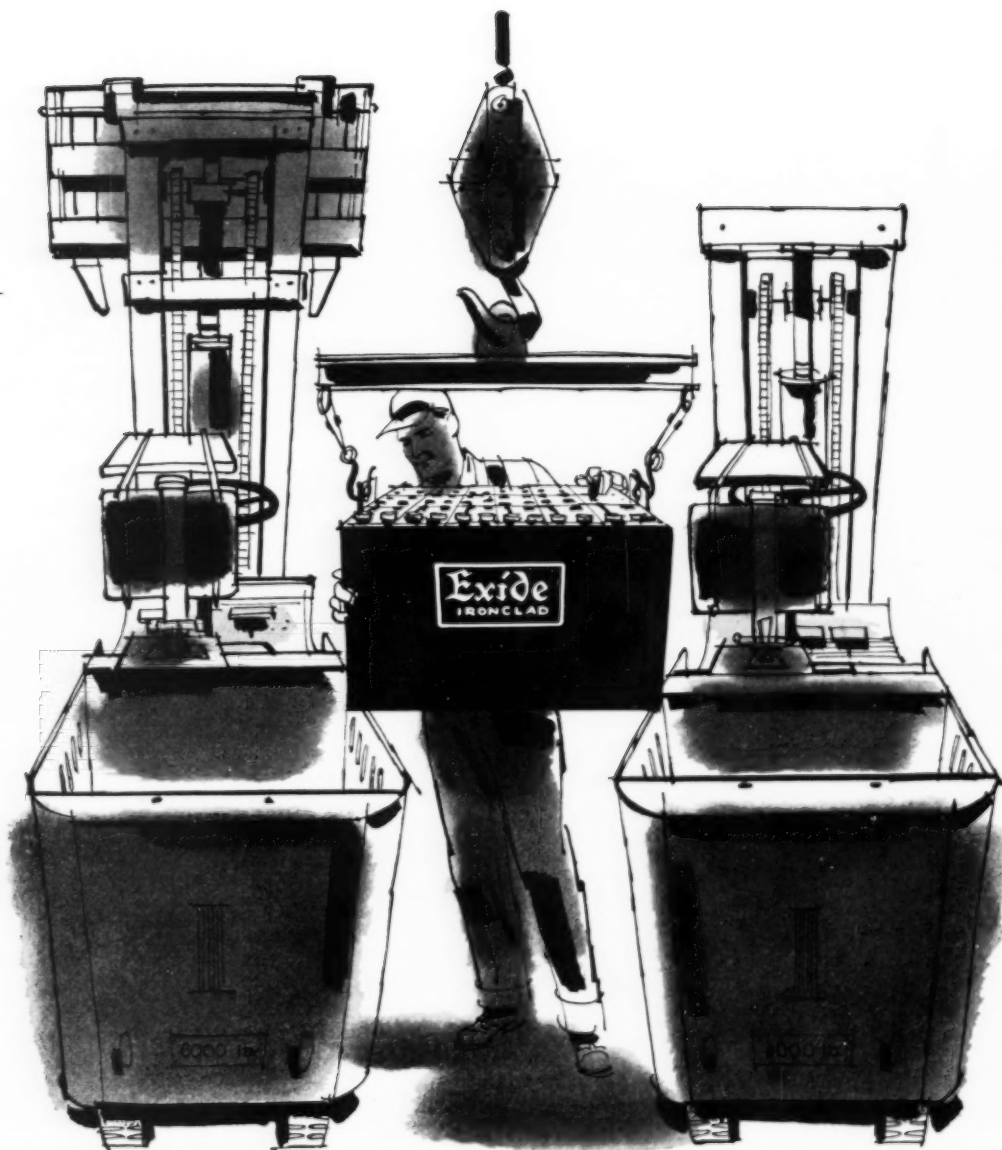


For all Daysaver schedules write for FREE handy "Transi-Timer"

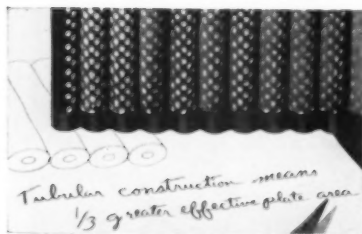
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**Standardization . . . interchangeability . . . versatility**  
**Made possible by new Exide-Ironclad Battery**



Here's the secret. Unique advanced tubular construction. Every positive plate packs more power. So you get greater battery efficiency—a more compact battery for a given capacity rating.

It packs more power—up to 44% more than batteries you may be using now. But the dimensions are the same. Buy a new, more powerful Exide-Ironclad Battery for a small truck, and you boost its work capacity. Use the same battery to provide normal power for many bigger trucks. Yet it costs you less. Only Exide-Ironclad Batteries give you this extra versatility, interchangeability and extra economy—plus

higher power and even longer life potential. Now more than ever, Exide-Ironclad Batteries are your best buy. For details, write Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 2, Pa.

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# WASHINGTON



By Ray M. Stroupe, *Chilton Washington News Bureau*

**RAIL MAIL PAY RISES**—Under ICC order, mail pay rates for eastern railroads rise an average of 30 per cent on Sept. 1. The ICC has authorized, also, retroactive advances in mail pay for the eastern lines. Increases of 30, 25, and 20 per cent are for periods extending from Aug. 31 of this year back to July 3, 1956. Estimates place the amount of retroactive pay at \$61.8 million. Amount of the projected increase is estimated at \$33.4 million.

**TRUCK HAULS DOWN**—Intercity freight hauled by truck in January-March showed the effects of general business weakness. American Trucking Assns. disclose first quarter haulings were under 73 million tons, down 5.6 per cent from the first quarter 1957. While general freight carriers recorded declines, haulers of other items made gains. Movement of refrigerated solids and liquids, farm crops, and liquid petroleum was up.

**TO USE LOWER RATE**—One western railroad tells Washington it will abandon the ICC-approved boost on iron and steel scrap. The ICC earlier this year granted railroads a 40¢-per-ton increase, as part of selective freight rate rises. Chicago & North Western Ry. plans to substitute a compromise of 3 per cent, maximum 40¢. Reportedly, substantial scrap tonnage has been diverted to truck and barge lines since the ICC allowed the rail rates to rise.

**REVENUE RULES READY**—Final rules to insure transportation tax receipts have been issued by the Internal Revenue Service. (Only the passenger excises are scheduled to remain in effect after Aug. 1.) Employers not filing these taxes and those withheld from employee income are ordered to deposit taxes for the U. S. Failure can mean a year in jail and a \$5000 fine. New rules are in Treasury Decision 6299, published in the Federal Register on July 1.

**'57 FREIGHT REVENUE UP**—Carload freight yielded \$9.1 billion in gross returns to Class I railroads in 1957, the ICC reports. The amount, in a preliminary ICC summary, is almost \$15 million higher than that for 1956. Gross revenues for 1957 included \$212.5 million in forwarder traffic. Manufactured and miscellaneous goods accounted for \$4.3 billion of the total. Revenues from lcl freight came to \$252 million.

**WOULD CHECK CARRIER**—Two motor carrier groups ask the ICC to limit Florida truck activities of Pan Atlantic Steamship Co. A brief filed with the ICC by American Trucking Assns. and National Motor Freight Traffic Assn. raises questions of terminal area definition and description at three Florida ports. Pan Atlantic moves seaborne freight in truck-trailer boxes. The firm trucks freight up to 100 miles from port cities.

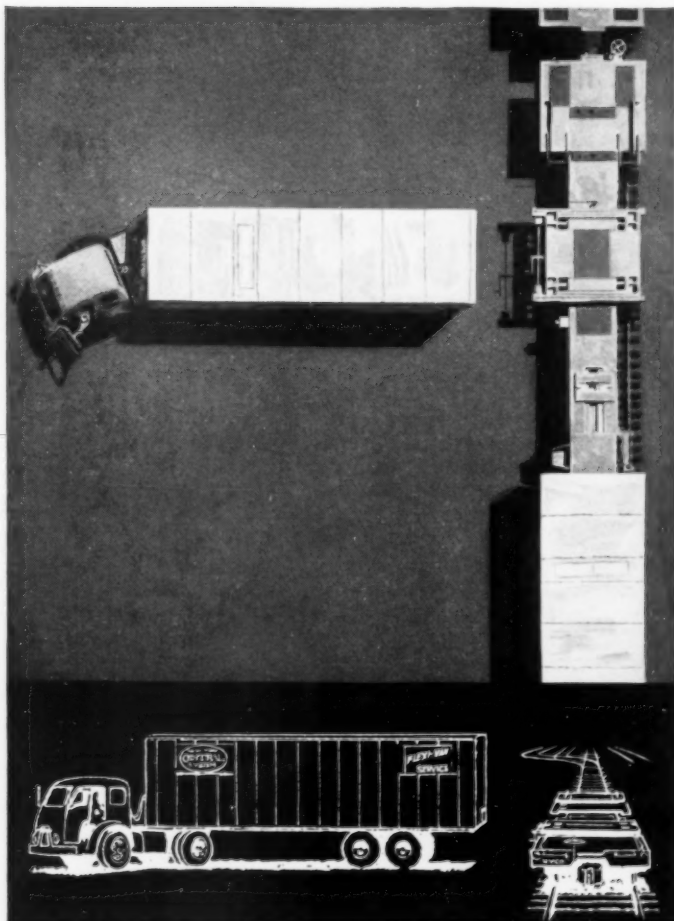
**DUAL RATES WEIGHED**—Congress moves for more time to study dual rate systems for steamship conferences. The Senate in July passed an interim bill, S. 3916, to insure legality of dual rates until June 30, 1960. The House Merchant Marine Committee approved a measure with the same intent. Recently, the U. S. Supreme Court ruled out the dual rate system for one group of lines serving Atlantic and Gulf ports.

**SAVINGS IN TERMINAL CLOSING**—The closing of a New Jersey Army terminal is to save an estimated \$780,000 a year in public funds. Caven Point Army Terminal, near Jersey City, is to be inactivated soon. Primarily, this base has served as an open storage area and dunnage yard for Brooklyn Army Terminal and as an overseas shipping point for vehicles and equipment. Brooklyn Terminal is to absorb workloads and employees from Caven Point.

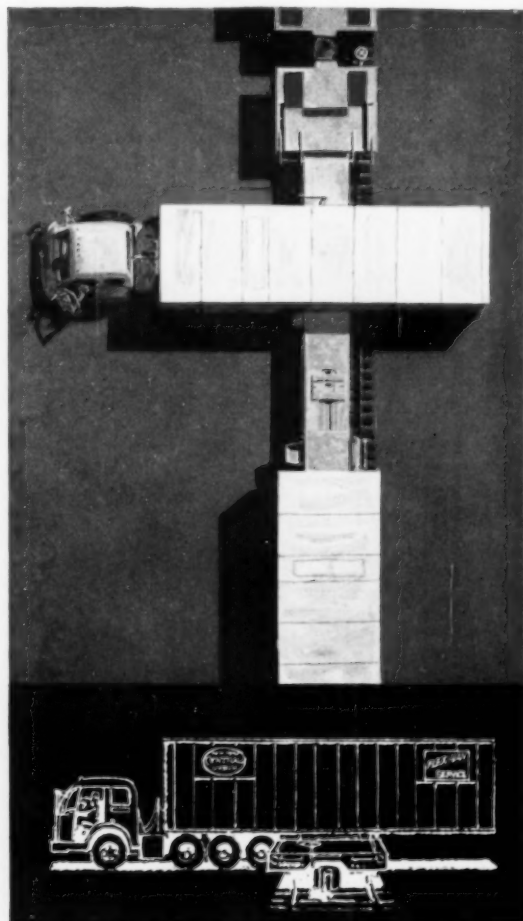
**ATOMIC MERCHANT SHIPS**—Superior atomic engines for merchant ships are sought by the government. General Dynamics Corp., with a new Maritime Administration-Atomic Energy Commission contract, has undertaken to develop a gas-cooled atomic power plant. Previous studies indicated this type would be lighter than other nuclear power plants. The first merchant ship using an atomic engine, the N. S. Savannah, is to be completed in 1960.

**URGES FEE MINIMUM**—Some charges for iron and steel articles moved by truck in the eastern half of the U. S. may be raised. An ICC examiner asks the Commission to find certain truck rates "unjustly" low. He would have the ICC fix minimum reasonable truck rates, computed in keeping with rail line distances. Rates not conforming to a scale presented by the examiner would have to be raised. His proposed report is given in Docket No. MC-C-1510.

# What's new on the New



1. Trailer is backed toward special flatcar



2. Trailer slides off rear wheels . . . onto turntable

## FLEXI-VANS put your plant on our main line with a fast, new concept in truck-train service

Shippers who like the speed and dependability of trains (but who want the convenience of door-to-door truck service) will find that Flexi-Van offers the better features of *both* forms of transportation—in a single integrated system.

The total effect is like having the New York Central main line pass right by the door of your plant! Here's how it works:

Flexi-Van trailer tractors pick up and deliver shipments at your loading platform. Then, for the long hauls in between cities, the vans slide aboard mile-a-minute New York Central trains.

Transfer time at rail terminals has been cut far

below that of conventional highway-rail freight. Shipments keep moving smoothly with minimum handling. And you deal with *only one* office, receive *only one* bill.

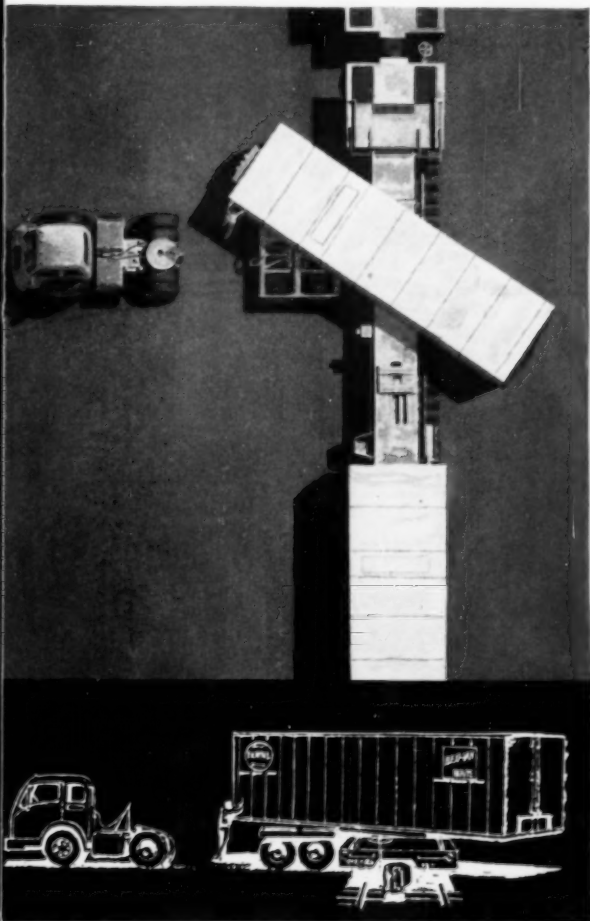
Flexi-Van trailers are 36 feet long with a 2200-cubic foot capacity. And standard tractor units can pull them on the highway.

To put the trailer aboard the train, the driver simply backs it off the trailer wheels onto the turntable of the Flexi-Van flat car. The trailer can then be swung into carrying position and locked into place by a single man.

Because the Flexi-Van goes on the train minus

w

# York Central



**3.** Driver swings unit to lock it into place

wheels, it rides low. And with a lower center of gravity, your Flexi-Van shipment rides easy—even at the 60-mile-an-hour clip that Central freight trains reach on much of the main line.

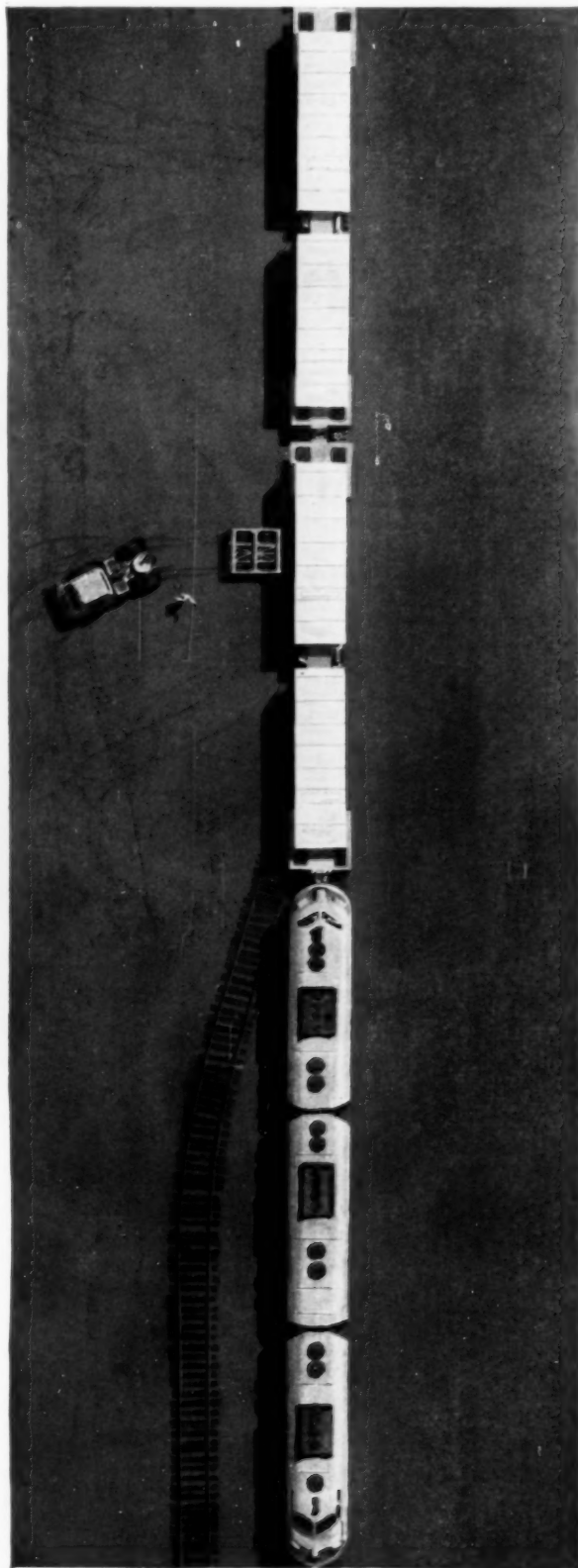
Flexi-Vans already connect St. Louis, Kankakee, Joliet, Chicago, the Albany-Troy-Schenectady area, Boston, and New York. And service is being expanded to other on-line cities.

Flexi-Van offers new convenience and speed to Central shippers. It is one of many new developments to speed your freight on this progressive railroad. Some of these innovations may apply even more specifically to your shipping problems. For details, ask our freight salesman.

Route of the "Early Birds"—Fast Freight Service

## New York Central Railroad

AUGUST 1958



**4.** Flexi-Van units may be placed anywhere throughout a train. Immediately on arrival, trailers can be hitched to a tractor at trackside and they're ready to roll onto the highway.

*When the Brewery  
moved to Brookville...*

## What went wrong with the beer?



The Artesian water at Brookville is as fine as any on earth. And Brookville was 135 miles closer to what had become this brewery's major market. Plant relocation at Brookville seemed a sound and sensible move, except—

Except that the beer they brewed in Brookville was *not* the same beer as before...and neither were the sales.

The ingredients; the processing; the aging were all the same. But something had been lost in moving.

### *The People Behind Your Product*

Modern technology has become so precise that it's easy to forget that products—in the final analysis—are created by *people*. When the brewery moved to Brookville, the brewmaster himself, and two assistants, preferred to stay home and find other jobs. Their successors had the formula, but they didn't have the "touch".

Every company has its "key people" but often doesn't know who they are till it loses them.

Today, with so many industries expanding, decentralizing and relocating, the transfer of key personnel has become an increasingly important problem to business.

### *The Human Side of Moving*

To help business conserve its most valuable asset—trained, experienced and loyal personnel, Greyvan—one of the leaders in long-distance moving—has undertaken a continuing study in "The Human Side of Moving".

With the help of cooperating businesses, we are seeking a better understanding of the real reason why people move—or don't move; and how they can be helped to find a happy life in the new community. Any company executive interested in this program is cordially invited to write for further information to:

Henry P. Bruner, President, Greyvan Lines, Inc., 57 West Grand Ave., Chicago 10, Ill.



LONG-DISTANCE MOVING & STORAGE

## GREYVAN LINES



THE GREYHOUND MOVERS



# On the Line—



## "We Had a Few Problems . . ."

Chance acquaintances sometimes provide interesting and educational experiences.

Some months ago, for example, we were waiting for a taxi in front of a hotel. A friendly middle-aged man, also looking for a cab, engaged us in conversation. He said he was going to inspect a recently leased warehouse.

We told him that we, too, were going to visit some warehouses. Our object, we explained, was to find good examples of modern industrial lighting. He invited us to visit his warehouse. We accepted.

"We had a few problems in our other warehouse," he explained as we rode on. "It was an old factory which the owner leased to several small firms. It had a rail siding and a truck dock but we never had clear access to either. The other firms used them daily, whereas we only needed them about a half dozen times a year. But everytime we wanted access, there was clutter, delay and some actual personal conflict. Demurrage got to be quite a problem, too.

"Despite the fact that the owner provided a watchman, our area had been broken into several times. Our product, a chemical compound in 50- and 100-lb bags, is not one that thieves can dispose of readily. But they ripped many bags open and created quite a mess.

"On several occasions, also, we had some water damage. Some of it was caused by windows broken by the neighborhood kids. The floors were wavy and worn. If the floor trucks we used were loaded too high, the bags would spill. Several men were injured."

At about this point of his problems we arrived at his "new" warehouse. It was a long concrete block building with a corrugated metal roof, surrounded by a high wire fence. The warehouse was locked but our host had a key and admitted us into the building. After striking a few matches, he found the light switch. Three bare, dirty incandescent lamps lit the aisle facing the door, a fourth was out.

"I guess these lights won't win a prize," he said, "but they're adequate for our needs." We rated the lighting as poor.

As we walked between high stacks of bagged chemicals, a cat scurried from a side aisle. "Wonder how he got in," our host remarked. In a moment he got the answer. There was a broken window. There also was water on the floor. We felt the bags nearby. They were damp.

We returned to the main aisle. About 100 feet down, at the intersection of another aisle, there was a pile of bags on the floor, some burst open. The light was dim but it was obvious that the bags were improperly stacked and slipped. Our host agreed, saying, "It's impossible to get good labor these days."

"Yes, it takes some know-how to stack properly," we agreed. After the tour, we agreed with our host that his new warehouse had good floors, solid walls, and a good roof. But we couldn't resist asking if he ever tried to store his products in a public warehouse. "Oh yes," he replied, "but this is cheaper."

We went our way and left him with his problems.

*A. W. Greene*  
EDITOR

## Yakkety Yak

Problems seem to follow in the wake of some people.

There was the hot-tempered bookkeeper who yelled at the office boy, who made a hasty retreat and bumped into the billing clerk,

... who fell against an adding machine and knocked it over

... on the posting clerk.

... Her scream scared the credit clerk into a heart attack,

... which upset the accounts payable clerk, who made an incorrect entry on a customer's bill.

... The customer raised Cain with the freight rep,

... who went to the boss,

... who bawled-out the bookkeeper,

... who blew his fuse at the accounts payable clerk.

SKOL—Nellie also had the knack of starting chain-reaction problems. She opened a billet-doux to the boss, marked personal.

... Annoyed, he told her to fill the ink well and thermos bottle.

... When asked, later, why she was fired, she replied, "I guess he wasn't feeling well. His lips, teeth and tongue were blue."



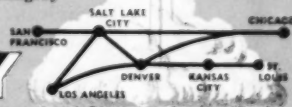
## ON THE DOUBLE!

Your freight moves just that way when you call your nearest Ringsby terminal... where fast coordination of city pick-up and delivery is the order of the day, every day. In this communications "nerve center", the radio dispatcher plots the entire metropolitan fleet's movement. When you phone for a pickup, or a delivery is on the way, he pinpoints the nearest truck—radios the driver—sends him straight to your dock. Things happen fast all down the line when you ship Ringsby Rocket... the fastest distance between two docks.

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LINE OF THE ROCKETS



# THE MISSISSIPPI

The Mississippi River has been called "the Great Sewer." It has also been called "the Body of the Nation." It's big. Its water system runs from Pittsburgh to Sioux City, from St. Paul to New Orleans, and—looking at it broadly—from Chicago and the Great Lakes to Corpus Christi, Texas.

Including the Missouri, its main branch, the Mississippi is the longest river in the world—about 4,300 miles. It draws its water from 28 states, from Delaware to Idaho. Its drainage area is larger than all Europe, not counting Russia and Scandinavia. It covers more land than Turkey, Italy, the Balkans, Poland, Czechoslovakia, Germany, France, the Low Countries, Denmark, Spain, Ireland, Portugal and Great Britain combined. It drains a third of the nation.

It carries 25 times as much water as the Rhine,

three times as much as the St. Lawrence, and about 340 times as much as the Thames. The size of its basin—about one and a quarter million square miles—is exceeded only by the Amazon. It is nearly twice that of the Nile, twice the Ganges, three times the Indus, five times the Euphrates, 15 times the Rhine. It's big.

This is the domain of the Union Barge Line which has been hauling cargoes of every description throughout this broad marketplace since 1913. UBL provides inexpensive, safe, prompt transportation of all materials ranging from steel to salt, timber to chemicals, cotton to grains, oil to pipe. More than 60,000,000 consumers can be reached by the Mississippi System. It's the Body of the Nation.

Write for bulletin 1801, and see how UBL can help you cut your shipping cost efficiently.

**UBL**

**UNION BARGE LINE • PITTSBURGH 22, PA.**

# LETTERS

## TO THE EDITOR

### Overcharge Claims

To The Editor:

Mr. Heyerick's letter, June issue, page 22, indicates his dissatisfaction with the delay in the disposition of overcharge claims.

In the course of my business I have handled overcharge claims via all forms of transportation and in all fairness to the carriers my experience has been prompt settlement of claims. This I attribute to the fact that all claims were supported by tariff authority and necessary documents.

With respect to settlement of claims involving joint line traffic the following decision of the Interstate Commerce Commission should be of interest.

*"Duty of Carriers to refund promptly"—17 I.C.C. 330.* Delay is due to the efforts of the delivering carrier to ascertain before making the refund to the shipper which carrier participating in the movement is responsible. This is not a proper practice. The shipper is entitled to repayment from the carrier that has collected the freight charges as soon as it appears that an overcharge has in fact been made. We will understand that the adjustment of claims is a matter that requires time and that they cannot safely be paid until after the facts have been fully investigated. But in our judgment the claims office of carriers should be so organized as to enable them to dispose of all overcharge claims within 30 days except those of unusual or special character, and such claims ought to be disposed of within 60 days at the utmost.

Thus the foregoing should be a good "time standard" relative to disposition of claims providing the required information is filed with the claim to enable the carrier to make the proper investigation.

Harry F. Newmiller  
Traffic Consultant  
Philadelphia, Pa.

### Legal Liability

To The Editor:

We have a client who operates both a dry storage and refrigerated storage warehouse. He also operates a separate corporation for drayage.

We are interested in obtaining information on legal liability cases that have been cited against operators such as his, where the operator has been held liable for loss of merchandise in his care, custody, and control.

Jack H. Rose  
Bunker-Dougherty Inc.  
Salt Lake City, Utah

Your liability when acting as a common carrier is greater than when you act as a warehouseman. I have collected for you several late and leading higher court decisions all of which involve loss of or destruction to stored merchandise. Also, some of these cases involve common carriers so that you may distinguish between the degree of care required by law for common carriers and warehouses.

Following higher court decisions involve fire losses: 278 Pac. (2d) 795; 141 S. W. (2d) 205; 267 S. W. (2d) 363; 267 S. W. (2d) 359; 61 Pac. (2d) 510; 46 Atl. (2d) 158; 172 Fed. Rep. 910; 13 A.L.R. (2d) 669; 266 S. W. (2d) 19; 33 Cal (2d) 834; 58 N.M. 211; 66 Pac. 259; 54 L.R.A. 774; 35 Pac. (2d) 56.

The following cases involve moth and vermin damage to stored goods. 7 La App. 342; 271 Pac. 532; 249 Ill. App. 28; 45 S. W. (2d) 563.

The following cases involve loss of or damage to goods caused by flood water, theft, etc. 28 N. E. (2d) 694; 142 Pac. (2d) 466; 49 Fed. Rep. (2d) 291; 54 Pac. (2d) 626; 253 S. W. (2d) 196; 113 Fed. Supp. 645; 266 Pac. (2d) 480; 257 Pac. 625; and 157 S. E. 563.—Leo T. Parker, DA Legal Consultant.

### Carrier Charges

To The Editor:

We are interested in learning whether carrier charges for services performed are collectible in the event of the total destruction of a shipment by fire.

In other words, suppose a shipment moved from Mobile to New Orleans and the total transportation charges were \$100.00 and charges for accessorial service, such as packing, were \$50. The shipment and van caught fire and both were totally destroyed.

We understand about the carrier's liability or insurance for the value of the shipment, but would charges for these services be collectible? If so, would it include transportation and accessorial services? Would it make any difference as to where the fire occurred, in other words after loading on the van in Mobile, somewhere en route, or after reaching destination of New Orleans but before delivery?

Also, as you know, some household goods carriers tariffs provide for outside insurance contracts by the shipper while the additional liability for insurance is assumed by some carriers themselves. Would this have any bearing on the collection of charges?

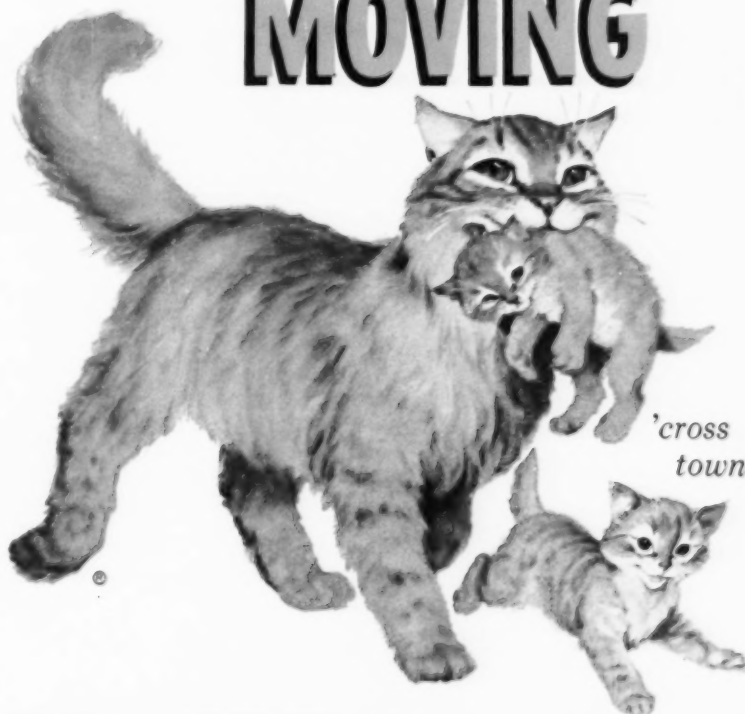
Abb Wooldridge, Jr.

Abb's Moving Service  
Mobile, Ala.

Generally speaking, the courts hold that transportation charges, not earned, are not collectible under any ordinary circumstances.

On the other hand, the correct answers to your various questions depend to a great extent as to the cause of the fire, and whether or not you expect to recover your full charges, including service charges and packing. In my opinion it is not important where the fire occurred, if before lawful delivery. — Leo T. Parker, DA Legal Consultant.

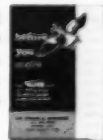
# DEPENDABLE MOVING



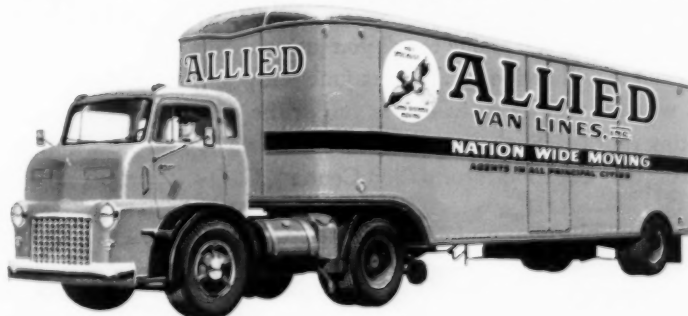
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It's so much easier and safer with your Allied Mover—the No. 1 specialist in local moving (packing and storage, too). He'll handle all the details from packing fragile objects to arranging furniture. Your goods are moved *with care*, and *right on time*!

**FREE BOOKLET**—Ask your Allied Mover for your copy of "Before You Move"—a booklet filled with tips on trouble-free moving. Look for his name in the Yellow Pages under "Movers."



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## CLIC keeps a finger on your car

First time you can, route a car so that somewhere on its journey it will be on Chesapeake and Ohio tracks. Tell your C&O freight representative to let you know when he gets a report of it.

Within minutes of the time it comes on C&O rails, he'll be on the phone to tell you just where it is, when it will arrive at the next junction point, and when it will be delivered to you or the connecting railroad. Such service is made possible by CLIC (Car Location Information Center), C&O's

exclusive, all-teletype car reporting system—the system that really works. Try it! See what a satisfaction it is to get a dependable report on where your car is *right now*—not where it was supposed to have been day before yesterday.

CLIC alone would be reason enough for routing freight over the C&O. But there are other good reasons, too. C&O's smooth track and careful handling minimize damage. And C&O's fast schedules mean early, dependable delivery.



Would you like a copy of a booklet describing CLIC? Just write:

**Chesapeake and Ohio Railway**

3803 TERMINAL TOWER, CLEVELAND 1, OHIO

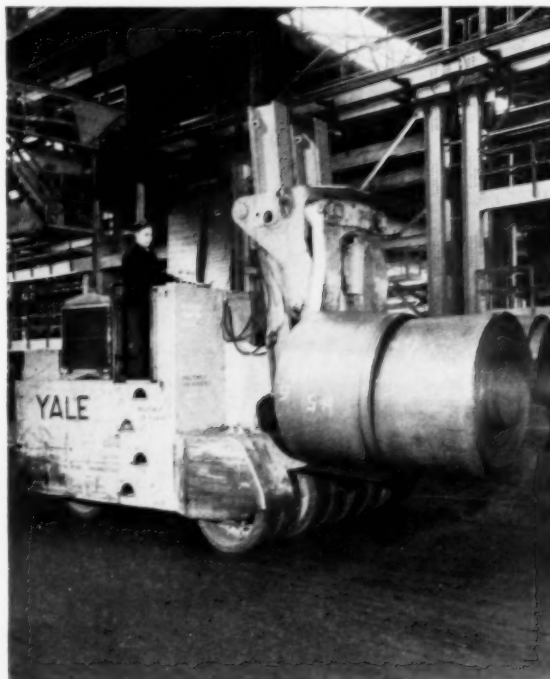
S H I P   C & O . . . A N D   W A T C H   I T   G O !

more for your 'rack dollar' because



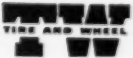


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**Solid tires?**

**Which industrial tires are right for your job?**

**Free B.F. Goodrich  Analysis tells you**

**Can save you as much as 50% on tire costs!**

**Problem:** There are many different industrial tire types, sizes, tread compounds and tread designs. Each one is built for a specific materials handling job. Do you know which tires are right for *your* job?

**Solution:** Without cost or obligation your B.F. Goodrich Tire and Wheel Analysis man will study your equipment, loads, hauling surfaces and other special problems you have. He'll recommend the right tires for you to use—recommendations that are unbiased because B.F. Goodrich makes a *complete* line of industrial tires.

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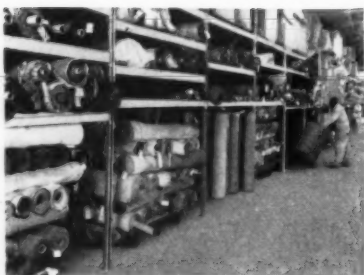
**B.F. Goodrich *industrial tires***

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AUGUST 1958

Circle No. 5 on Card, Facing Page 49, for more information

more for your 'rack dollar' because

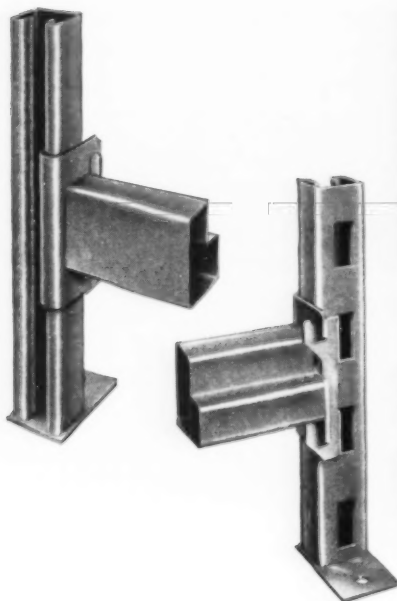


# *American* **Slide-n-Lock adjustable**

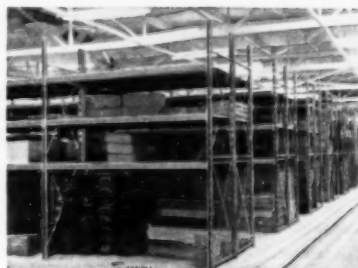
(Model SL-2)

## **STORAGE RACKS**

give you more features...more value!



View on left above shows the smooth line construction of the aisle side of post and stringer. There are no protruding edges to create hazards. View on right shows the rigid connection when the stringer is "locked" to the post. Both views show the "L"-shaped tubing (no open seams — it is a one-piece continuous welded tube). Stringers raise and lower like a window.



Stronger and heavier POSTS for greater resistance to shock and abuse . . . "L"-shaped — no open seam STRINGERS (see copy at left) . . . greater aisle safety (see copy at left). Double cross bracing — material always in tension and not compression, means greater rigidity. Racks can be adjusted to floor irregularities with turnbuckles. These are only a few of the many features of American Slide-n-Lock racks.

**send for catalog!**

**over 800 different sizes and capacities  
from 5 basic parts**

NO BOLTS



NO WELDING



IMMEDIATE DELIVERY



**AMERICAN METAL PRODUCTS COMPANY**  
STORAGE RACK DIVISION

5959 Linsdale Ave. **amp** Detroit 4, Michigan



*Are freight schedules important  
to anyone but the shipper?*

## On the Rock Island, Yes

*to quote George Voss, Mo.-Kan. Division Superintendent*

"Everyone expects passenger trains to be run on schedule," says Mr. Voss. "But what about freights? Don't shippers have a right to expect conscientious efforts to run them on time?"

"We on the Rock Island think they do. I've got 2,440 men working with me on this division—all dedicated to moving freight from point of departure to destination on time . . . and in good condition.

"I don't say we never run late. Undoubtedly there are shippers who have been disappointed when unforeseen trouble caused a delay. But it doesn't happen often. The important thing is, I don't know of a man on this division who is apathetic about freight movement. We want it to move on time, and we do our best to see that it does."

Fortunately, men like George Voss don't have to do it

alone. They have the most up-to-date facilities money can buy—streamlined classification yards, modern freight transfer houses, electronic order processing equipment, centralized traffic control—to expedite shipments.

Think of it! If you're shipping West through St. Louis there's a fast freight daily to Kansas City. Number 71 leaves St. Louis at 4:30 p.m. and hits K. C. at 3:30 next morning. This connects with California train 91, leaving for Los Angeles at 7 a.m. the same morning and arriving only four days after your shipment left St. Louis.

"We do everything in our power to stick to this schedule," says Mr. Voss, "because we on the Rock Island believe the shipper has as much right to on-time service as the passenger. So next shipment, route it Rock Island. We'll do everything we can to serve you well."

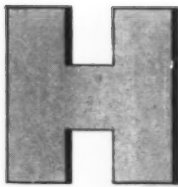
If you have any comments, pro or con, regarding our rates or services, we invite you to discuss them with your Rock Island traffic representative.



**ROCK ISLAND LINES**

*The road of planned progress...  
geared to the nation's future*

CHICAGO 5, ILL.



**Haslett Warehouse Company** OAKLAND, CALIFORNIA

protects its property *Automatically*  
gets better **FIRE** and **BURGLARY**  
protection and...

*Saves \$10,000 a year*

ADT Automatic Protection has been an integral part of our warehouse security for many years. When we constructed our latest modern building in Oakland, it was only natural that we should incorporate your services. Annual savings of \$10,000, plus the added security of ADT Protection, made this a must.

*Donald H. Lett*  
Vice President

Newest addition to the expanding chain of Haslett warehouses serving Central and Southern California is this recently constructed building at Oakland.



Overlooking no detail to safeguard customers' goods against fire, burglary and other hazards, Haslett management chose a combination of ADT Automatic Protection Services.

In case of fire, Central Station Sprinkler Supervisory and Waterflow Alarm Service summons the fire department *automatically*. ADT Burglar Alarm Service guards doors, windows and other accessible openings to notify police *automatically* when intruders attack. Heating Supervisory Service in cold-storage areas *automatically* detects and reports any excessive variation in temperature.

### May we show you what ADT can do for you?

Whether your premises are old or new, sprinklered or unsprinklered, an ADT specialist will show you how combinations of *automatic* services can protect your property, profits and employees' jobs, at less expense. Call our local sales office if we are listed in your phone book; or write to our Executive Office.



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**AMERICAN DISTRICT TELEGRAPH COMPANY**  
A NATIONWIDE ORGANIZATION  
Executive Office: 155 Sixth Avenue, New York 13, N. Y.

Circle No. 7 on Card, Facing Page 49, for more information



**B**ETTER lighting means better warehousing.

The dark, poorly attended, and seldom visited warehouse commonly pictured in second rate television drama is disappearing. It is being replaced by a modern, well lighted, and extremely active distribution depot.

This warehousing evolution—from storage vault to distribution center—has brought severe changes to all phases of the industry. Systems, services, and physical facilities are being modernized to keep pace with the changing patterns of physical distribution.

Not the least important of these changes have been changes in the physical plant. And among the more important physical improvements have been improvements in lighting.

Because the modern warehouse is a place of action, good lighting is a must. It is not unusual for a public warehouse to handle 10 or more carloads a day for a single customer. Storage periods for given lots were once counted in months and years. Now they are counted in days, weeks. This fast-in-fast-out schedule demands top visibility.

Warehouse paperwork has been modernized and has multiplied. Services performed in warehouses, both public and private, include grading and sorting, packing and repacking, checking, weighing, and even some product assembly. All of these tasks require adequate lighting.

The warehouse worker who can see better usually does a better job. Since it is the major goal of most warehousemen to reduce the time required for each task, it follows that good lighting is a sound investment.

In addition to reducing the time element, good lighting helps the worker do a better and more thorough job. Direct labor and overhead costs are cut. Loss and damage go down, and the injury and accident ratios usually are reduced.

Good lighting also produces side benefits which can add up to considerable savings. Eyestrain, fatigue, and headaches are reduced. These things, plus added employee comfort, help increase overall efficiency.



AUGUST 1958 . . . Vol. 57, No. 8

### **Better Lighting-I**

## **The New Approach to Warehouse Lighting**

**The modern warehouse is a place of action. Fast in-and-out schedules and the variety of functions and services performed demand top job visibility**

Better lighting also means better display. In cases where customers or prospective customers visit the warehouse they are certain to be impressed by a clean, orderly, and well lighted establishment. Good lighting is conducive to cleanliness and orderliness. In addition, the

customer is more likely to get an impression of security and efficiency in a properly illuminated warehouse.

How to achieve better warehousing through better lighting is discussed in a series of four separate articles on the following pages. •

Average footcandle intensity is 10 in International Harvester's Dallas parts depot. Benjamin RLM dome units are mounted 12 ft 8 in. from floor





10 footcandles are maintained in Ford loading area with 400-watt mercurys 20 ft high

## **Better Lighting-II**

# **Minimum Requirements for Warehouse Lighting**

**By John Neidhart**  
*Mgr., Application Engineering Dept.*  
*The Miller Co., Meriden, Conn.*

**Proper footcandle levels must be supplemented by control of glare, shadow, brightness, uniformity, and color**

**W**AREHOUSING, like other industries, has its share of "gray zones." In some instances expansion has been so fast that improved lighting never has caught up. In other instances, management simply is not aware of the benefits of good lighting.

Warehouse people are discovering, however, that a lighting investment can be a bargain when stacked

up against returns. They also are finding that improving the light level to meet certain minimum requirements recommended by the National Lighting Bureau can be a relatively simple matter.

### **The Seeing Factor**

Four factors affect seeing. They are size, contrast, brightness (footcandles x reflection factor), and

30 to 35 footcandles in steel storage area with fluorescents at 25, 40 ft



Very high output lamps at 14-ft mountings provide 70 footcandles for loading



GE's Boston warehouse maintains 45 footcandles with two double-lamp rows



time. It is not always possible to control size, contrast, and reflection; but usually it is possible to increase footcandles. It is this increase that cuts the time factor in most warehouse operations.

The first step in designing warehouse lighting is to select a footcandle level to match the severity of the various "seeing jobs." The nature of visual tasks vary widely from warehouse to warehouse, or within a single warehouse.

The Footcandle Table shown here illustrates this point. The Table, taken from the NLB's Manual of Certified Lighting, is presented as a basic guide only. The Bureau publishes a much more comprehensive "Table of Minimum Maintained Footcandle Values."

In dealing with the footcandle problem the general procedure is to:

1. Determine what footcandle level is required for each task in the warehouse;
2. Select a level for general lighting that will be adequate for most tasks;
3. Plan supplementary lighting for tasks that require additional illumination.

#### Controlled Lighting

In addition to giving the necessary footcandle level, warehouse lighting should be comfortable for those working under it. This is achieved by controlling direct and reflected glare, shadows, brightness ratios, uniformity of lighting, and in some cases color of light source.

Direct glare often is caused by daylight. This can be avoided by shading the windows or by painting

*(Please Turn to Page 74)*

Shipping and receiving gets 60 to 75 footcandles with Slimline fluorescents



## A Legal Look at Better Lighting

The warehouseman has a certain legal responsibility to provide adequate illumination in and around the warehouse. Leo T. Parker, DA legal consultant, recently uncovered a higher court finding illustrating this point. Mr. Parker reports:

A warehouseman can relieve himself from possible liability for injury by providing adequate illumination. A person injured at a well-lighted location usually is held by the courts to be "contributory negligent." This relieves the warehouseman from liability.

However, if testimony shows that the location at which the injury was sustained was improperly illuminated, the warehouseman may be held liable.

In *D— v. N— Warehouse Co.*, 10 Atl (2d) 394, it was shown that an employee named D— walked into a dimly lighted elevator shaft. The safety gate was open, although the elevator was at a different floor.

D—'s dependents filed suit against the warehouse for damages. The warehouse counsel argued that D— was "contributory negligent" in failing to observe that the elevator was not at floor level before walking into the shaft.

The lower court held the warehouse liable. This verdict was upheld by a higher court, which said:

"As to whether or not D— was negligent depends on the condition of the light near the elevator shaft as he approached it. If an elevator shaft is properly lighted, a person who approaches it is charged with the duty of seeing whether or not the door is open when the elevator is not on that floor."

**Table 1: Footcandle Recommendations  
Based on Seeing Task**

| Task  | Minimum Footcandles<br>(on task or 30" from floor) |
|---|--|
| <b>MOST DIFFICULT SEEING</b>  |  |
| Finest Precision Work . . . . .   | 200-1000*  |
| Involving: Finest Detail; Poor Contrasts; Long Periods of Time<br>Such as: Extra-fine Assembly; Precision Grading; Extra-fine<br>Finishing  |  |
| <b>VERY DIFFICULT SEEING</b>  |  |
| Precision Work . . . . .  | 100  |
| Involving: Fine Detail; Fair Contrasts; Long Periods of Time<br>Such as: Fine Assembly; High-Speed Work; Fine Finishing   |  |
| <b>DIFFICULT AND CRITICAL SEEING</b>  |  |
| Prolonged Work . . . . .  | 50   |
| Involving: Fine Detail; Moderate Contrasts; Long Periods of<br>Time<br>Such as: Ordinary Bench Work and Assembly; Machine<br>Shop Work; Finishing of Medium-to-Fine Parts;<br>Office Work                             |  |
| <b>ORDINARY SEEING</b>  |  |
| Moderately Fine Detail . . . . .  | 30   |
| Involving: Normal Contrasts; Intermittent Periods of Time<br>Such as: Automatic Machine Operation; Rough Grinding;<br>Garages; Switchboards; Continuous Processes;<br>Conference and File Rooms; Packing and Shipping |  |

\*Obtained with a combination of general lighting plus specialized supplementary lighting. Care should be taken to keep within the general brightness ratios and to avoid glare conditions when light colored materials are involved.

# Proper Source and Fixtures for Warehouse Lighting

By Benjamin Scott Benson, Jr.  
*Director of Engineering*  
*Benjamin Electric Mfg. Co.*

Basic characteristics of three principal light types—fluorescent, incandescent and mercury; and fixtures best suited to each type and job

Power groove fixtures on 10x20-ft centers give 65 footcandles in warehouse

Four rows of two-lamp units on 12-ft centers, metal ceiling, 45 footcandles

Kurlash shipping room has 60 footcandles with three lamp louvered units



Below: Uplight fluorescents provide 25 footcandles in tobacco warehouse



**A**FTER the warehouseman has determined the level of illumination needed, his next step is to determine the light source and fixtures which will best provide this level.

The final decision should be reached in cooperation with a competent lighting engineer. However, the material that follows will give the warehouseman a general knowledge of the subject, and will permit him to make his own rough appraisal.

## Low-Ceiling Areas

If the mounting height is less than 20 ft above the floor, fluorescent or incandescent lighting is used most often.

Fluorescent lamps have the advantages of high efficiency and long life. This results in lower operating costs. Fluorescents also have a relatively low brightness.

The light output of fluorescent lamps is reduced by room temperatures that are very high or

Columbia Electric warehouse uses two-lamp units (rapid start) at 16-ft height





very low. In cold areas, like cold storage plants, this can be overcome by using a totally enclosed fixture. However, in either hot or cold rooms serious consideration should be given to the use of incandescent or mercury.

Incandescent lamps are less efficient but require a lower initial investment. They should also be considered where:

1. Lights are turned on and off frequently.
2. The current is d-c.
3. A concentrated light source is required for supplementary lighting.

#### High-Ceiling Areas

If the mounting height is 20 ft or more above the floor, the choice lies among mercury, color-improved mercury, a combination of mercury - incandescent, incandescent alone, or fluorescent.

Mercury and color-improved fluorescent-mercury lamps are efficient producers of light and have a long life. Because of their brilliance, the higher wattage sizes normally are recommended only for higher mounting—about 30 to 35 ft or more. Most commonly used sizes are 400, 700 and 1000-watt.

Combinations of mercury and incandescent can be used:

1. Where it is desirable to have some incandescent lamps that restart immediately if there is a momentary interruption of power.
2. Where the bluish color of mercury lamps is not desirable. Color is improved if incandescent is mixed with mercury at least on an equal wattage basis. It is improved still more if they are mixed

on an equal lumen basis. Color-improved mercury lamps usually are used instead of combination systems. A few scattered incandescent units may be included to provide some illumination immediately upon restoration of power after an interruption.

Incandescent lamps generally are used:

1. In dead storage areas.
2. In most areas where low levels of illumination are required.
3. Where enclosed dust-tight or explosion-proof fixtures are needed.

Fluorescent lamps of the new higher output type make possible the economic uses of these sources. They are available in 8-ft lengths, in the newly developed T-12 and T-17 PG lamps. These units give approximately two-and-one-half times the output of the slimline lamps.

#### Choice of Fixtures

In selecting a fixture, these factors should be considered:

1. Light output—footcandle levels, color, shielding.

2. Protection from dust, vapors, or explosion (where needed).

3. Durability and efficiency of reflector.

4. Durability of the fixture.

5. Ease of cleaning and maintenance.

Light output has been discussed in Part II (Page 34).

#### Special Application

Explosion-proof equipment is required if hazardous atmospheres are present. These industrial areas are listed as Class I, Groups C and D, by Underwriters' Laboratories.

Dust-tight fixtures are required for areas classified as follows:

Class II, Group E: Atmosphere containing metal dust.

Class II, Group F: Atmosphere containing carbon black, coal or coke dust.

Class II, Group G: Atmosphere containing grain dust.

Class III: Areas in which easily ignitable fibers, or materials producing combustible flyings, are handled.

(Please Turn to Page 75)

**Table II: Characteristics of Reflectors**

| Type of Reflector            | Where Used   | Comments   |
|------------------------------|--|--|
| Porcelain enamel             | Low-bay incandescent and fluorescent fixtures; high-bay incandescent and mercury fixtures and fluorescent fixtures | High reflectance and great durability. Can stand repeated cleaning. Diffusing nature makes it well adapted for use in fixtures having a widespread light distribution.   |
| Baked paint enamel           | Fluorescent fixtures   | High, diffuse reflectance. Not as durable as porcelain enamel, but can be used in clean areas, such as air-conditioned rooms, where maintenance is not a serious problem. Better distribution and light control than porcelain enamel. |
| Aluminum                     | High-bay incandescent, mercury, and fluorescent fixtures   | Available with either a diffuse surface for spread-type light distribution, or a specular surface for concentrated pattern.  |
| Prismatic and silvered glass | Low-bay incandescent fixtures, or as prismatic lens in troffers; high-bay incandescent or mercury fixtures         | Used in fixtures where the widespread or concentrated distribution of light is determined by the shape of the reflector, rather than the nature of the reflecting surface. Can stand constant washing without deterioration.           |

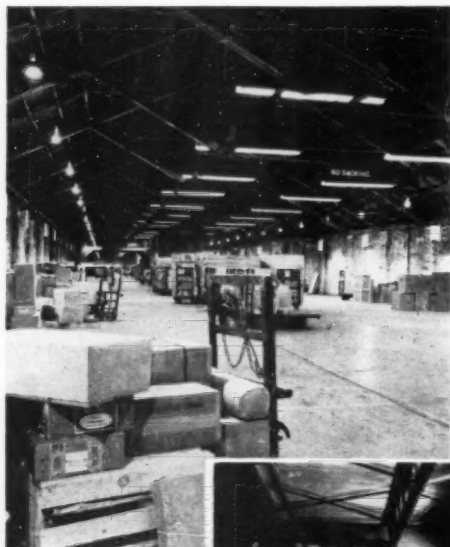
**Columbia boosts level in appliance parts room with supplementary lights**



## Setting Standards

By Richard S. Wissoker

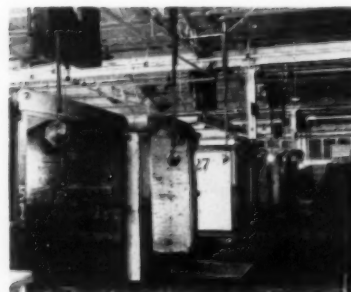
Sales Engineer, Day-Brite Lighting, Inc.



Left: 30 footcandles in freight sorting section are supplied by combination of fluorescent and filament



Two-lamp fluorescents on loading dock provide 15 footcandles. Units are mounted at 11 ft 4 in., 14 ft apart



Lights are directed into trucks by 300-watt lamps on conduit suspensions

AS HAS been mentioned, one of the major contributions to better warehousing has been well-planned lighting.

Two facets have been involved in the change in illumination. The first was acceptance of improved lighting standards, guided by the Recommended Practices of the Illuminating Engineering Society. The second has been the evolution and improvement in the variety of lamps and lighting fixtures. These two factors have helped the architect and design engineer achieve maximum light utilization.

### Lighting Standards

Publication of the "Code of Lighting: Factories, Mills, and Other Work Places" in 1915 by the Illuminating Engineering Society marked the introduction of

lighting standards. Four revisions to the Code have kept lighting standards up to date.

Quality standards have long been used and applied in the field of office lighting, but rarely had thought been given to the comfort of the warehouse or industrial worker. Fortunately a "comfort" trend has taken hold. Instead of bright bare bulbs contrasting against black, unpainted ceilings, the modern way is to paint the ceilings white and allow some light from the fixture to be directed to the ceiling.

As lighting levels and comfort increased, industry received many benefits from good illumination.

1. Workers see faster with more light. This results in increased production.

2. Workers see more accurately

with more light. This results in better workmanship, less waste.

3. Uniform illumination eliminates dark areas. This results in better space utilization.

4. Older employees require higher lighting levels. This results in continued production by skilled workers.

5. Adequate lighting eliminates eye fatigue. This results in less eyestrain.

6. Good lighting is cheerful. This results in better housekeeping and morale.

7. With proper lighting workers see quickly and clearly the possible causes of accidents. This results in greater safety.

### Lamps and Fixtures

Increases in footcandle levels which have taken place since the

# S for Warehouse Lighting

By applying the IES Lighting Code and by using the NLB Lighting Checklist, you can gain a seven-point pay-off in better lighting



Average footcandle intensity is 4 between units, 11 under units in depot



Baird-Ward Printing warehouse gets 40-50 footcandles with porcelain units



Westinghouse system provides high-level output in cold storage room



Sylvania district warehouse in Philadelphia shows good exterior lighting

two to three footcandles recommended in the first Code are due to the increased awareness of the need for good illumination, and to the introduction of new and more efficient light sources.

In 1915 the lamp of highest output was the gas filled tungsten lamp. The development of better incandescent lamps was followed by the appearance of the high pressure mercury arc lamp in 1932, and the fluorescent lamp in 1939. Continued improvements in all three light sources still are being made. Each new source or improvement has made higher footcandle levels possible.

Lamp advances have been paralleled by improved lighting fixture design. The requirement of higher footcandle levels and greater seeing comfort has created the

need for fixtures to accomplish these deeds. Equipment for all three sources make use of the up-light principle to illuminate the ceiling and reduce contrasts.

## Lighting Modernization

To modernize lighting in an existing warehouse it is necessary to consider four important areas:

1. Exterior of building.
2. Receiving, shipping, and packing.
3. Storage.
4. Administrative.

For a given installation, the variety of lamp and fixture combinations are great. Each problem and each area should be weighed carefully. The choice of lamp source and fixture can best be determined by setting down such factors as: Dimensions of area to be lighted,



110-120 plug-in line on dock powers in-truck fluorescents at 20 footcandles

height of ceiling, obstructions in the area, normal hours of operation, permanency of the equipment in the area.

(Please Turn to Page 76)

# Maintenance Standards for Warehouse Lighting

Within a year's time, dust and dirt can cut light output by as much as 30 per cent; only through planned maintenance can this be avoided—consideration also should be given to group relamping for economy

By Robert L. Zahour  
*Lamp Div., Westinghouse Electric Corp.  
Bloomfield, N. J.*

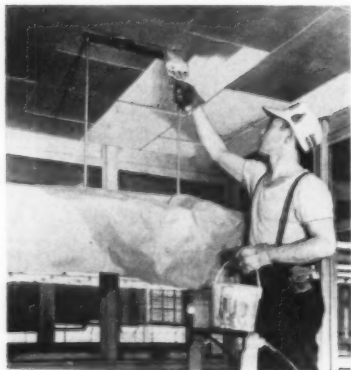


Maintenance platform on standard fork-lift can be used in spot replacement, group relamping

ANY lighting system must have periodic maintenance to give peak performance. This is especially true in warehouse areas where there is frequent trucking activity. During months of operation, certain conditions develop which tend to decrease the light output of each fixture. This lowers the footcandle level at the working areas.

Methods of computing lighting layouts, such as those taught by the IES and the NLB include a variable "maintenance factor." The introduction of a "medium maintenance" factor will result in a layout calling for more lighting fixtures and more lamps than one which includes

Repainting dirty ceiling helps restore reflection function and boost level



Reflectors should be washed with suds-less detergent, rinsed in clear water



In this warehouse fixtures are washed once a year, relamped every two years





a "good maintenance" factor. Similarly, a "poor maintenance" factor calls for an even greater number of lamps.

#### Dust and Dirt

Dust and dirt allowed to collect on the lighting equipment absorb light. This is paid for by consumption of electricity that never reaches the working areas. In a year's time, accumulations of dust and dirt on the reflecting surfaces of fixtures and on the lamps frequently reduce the delivered illumination as much as 30 per cent. Even greater reductions occur in extremely dusty or dirty areas.

To avoid this, footcandle meter readings should be made every few months after a new lighting system is installed or following a cleaning and relamping period. When the average illumination drops by 20 per cent of initial, a fixture cleaning schedule should be established. This operation can be done most economically when a crew with proper cleaning equipment does the job at one time. Merely wiping the fixtures with a dry cloth is not enough. This method does not remove the crusted layer, but may scratch reflecting surfaces.

When fixtures can be taken down, all surfaces should be washed with a sponge and a sudless detergent, and rinsed with clean water. Wipe off moisture with a clean cloth, and avoid getting water in sockets. If fixtures cannot be removed, a cleaning

agent should be used that requires no rinsing. Wipe off excess moisture with a clean cloth. Lamps also should be cleaned, but only when cool enough to avoid water cracks.

#### Walls and Ceilings

In areas where the walls and ceilings reflect a good percentage of light, these surfaces should be cleaned or repainted periodically. Many fixtures now are made to permit an upward component of light which illuminates the ceiling for more comfortable lighting conditions. Unless the ceilings are kept white and clean, this upward light becomes lost.

#### Burn-Outs and Aging

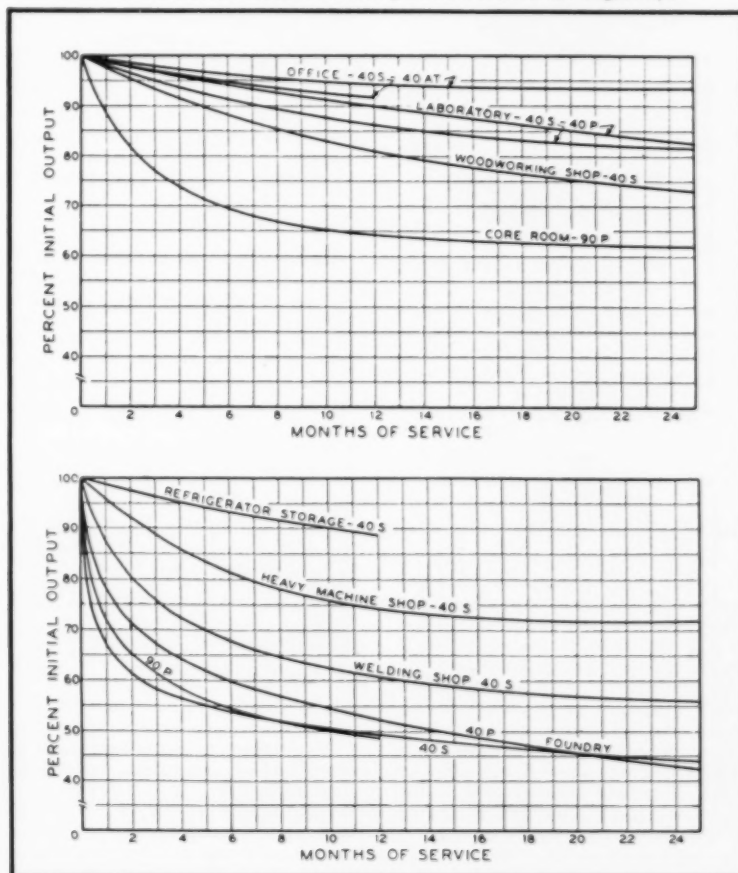
Although incandescent, fluorescent, and mercury lamps have an average rated life, some early failures may occur. Naturally, burnouts should be replaced.

However, as lamps age and approach their average rated life, burnouts will occur more frequently. The labor costs to replace lamps individually becomes excessive. In addition, several unnoticed hidden costs prevail which add up to unnecessary maintenance costs.

The usual replacement routine when an employee sees a fluorescent lamp burned out, follows:

1. The burn-out is reported to the supervisor. He phones the maintenance department.
  2. Maintenance man is assigned to make the replacement. A requisition is made out. He goes to the stockroom for a new lamp.
  3. He goes to get his ladder, and then to the department where the lamp is reported out.
  4. He removes the burned-out lamp and replaces it.
  5. He takes a few minutes for a
- (Please Turn to Page 78)

Top chart shows typical decline in light output due to dirt in low bay areas. Bottom chart gives same data for high bays



Crane truck used to get at inaccessible fixtures in group relamping program



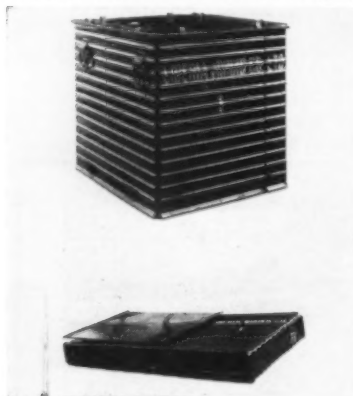


# PRODUCTS

... FOR FURTHER INFORMATION

## Collapsible Steel Box

A new re-usable steel transporter box, designed to fold into 1/5 its original size after unloading, has been developed by the Berger Div. of Republic Steel. The box is loaded and shipped fully erected in sizes ranging



from approximately 48 x 48 x 48 to 60 x 60 x 60 in., and returned to the sender empty and knocked-down for reshipment. For strength, the sides of the box are fabricated from heavy gage corrugated steel. Welded brackets are provided which hold steel rings positioned for easy pickup by overhead crane hooks.

Circle 33 on Card, Facing Page 49

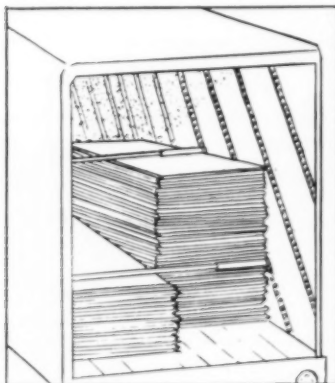
## Oil Cooled Clutch

The Hyster Co. has developed an oil cooled clutch for use in large capacity lift trucks in heavy-duty applications. This new unit is said to have a life span in the 10,000 hour range. In one particular field test where conventional dry clutches were being replaced every two to six weeks, the oil cooled unit ran 2500 hours without adjustment and a disassembly check showed virtually no wear. Secret of the new unit is the constant stream of oil that is directed to the center of the friction disc of the clutch mechanism.

Circle 34 on Card, Facing Page 49

## Load Stabilization

Cargo Stabilizing Co. has introduced a new load holder for cargo bracing. The system consists of belt rails and brace rods. The rails can be installed in the normal horizontal

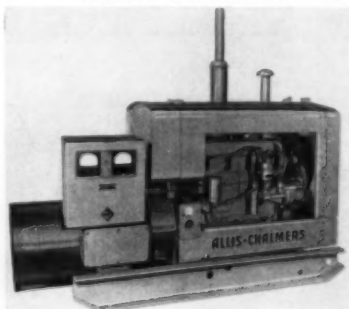


or vertical positions, or on the diagonal as shown here. The manufacturer claims that these diagonal installations reduce cargo damage through downward pressure.

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## Generator Set

The addition of a portable lightweight generator set developing 35,000 watts has been announced by the Engine-Material Handling Div., Allis-Chalmers Mfg. Co. The heart of this new G-226 generator set is the Power-

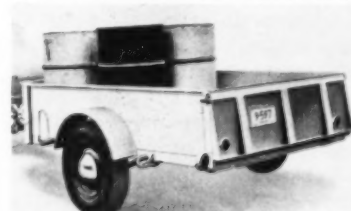


Crater engine. The new unit provides either continuous or standby power. It is complete as a package, with all controls and accessories needed for immediate use. The G-226 has an overall length of 68 in., is 26 in. wide and 37 in. high. It can be operated either by gas or gasoline.

Circle 36 on Card, Facing Page 49

## Elevating Cargo Trailer

An elevating trailer for all-purpose cargo handling that lifts its own load in 40 seconds, is being produced by Magline, Inc. Known as the Trailevator, it has a hydraulically operated



bed which lowers to receive load at ground level, then lifts and locks into hauling position. The new trailer need not be detached from the towing vehicle for loading or unloading. The bed will hold for loading at any level, from ground to hauling position. It has a rated capacity at 2000 lb with ample safety factor. The unit is of all-steel construction and weighs only 960 lb.

Circle 37 on Card, Facing Page 49

## Bulk Liquid Covers

Heavy canvas Safe-Ty-Covers, manufactured by Frommelt Industries, eliminate fire and explosion hazards in handling bulk liquids. They also offer protection from rain, snow, dust, spillage, and evaporation



loss. These heavy-duty vinyl coated canvas cones with weighted bottoms, contain a steel ring to provide the proper shape, and a draw-cord top to fit snugly around loading pipes and tubes. They are available in two sizes—19 and 22 in. diameters.

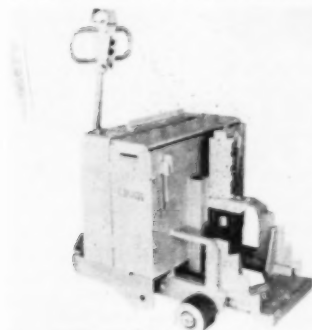
Circle 38 on Card, Facing Page 49

# and EQUIPMENT

PLEASE USE THE READERS' SERVICE CARD • • PAGE 49

## Tractor for Live Skids

Users of live skids can now have the advantages of power handling through a new tractor developed by Clark Equipment Co. Battery powered, it will handle live skids (those with fixed rear wheels and casters

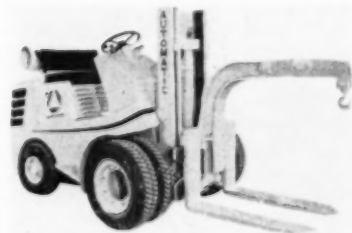


on the front) of any standard height. Gripping action is accomplished by a hydraulically-operated jaw which clamps down on top of the skid and a notched plate which fits under it. The machine has a drawbar pull of 200 lb and will travel at 2 mph loaded. Forward and reverse movement is controlled by a butterfly switch on the steering handle.

Circle 39 on Card, Facing Page 49

## Fork and Boom Attachment

The expense of maintaining extra equipment in a warehouse for handling bulky non-palletized materials can be eliminated with a new lift truck attachment. Automatic Trans-



portation Co. has developed this extension boom and hook. In a matter of minutes forks can be removed from the truck and the attachment put on. The boom extends 30 in. and has a capacity of 4800 lb. Additional extensions are available to lengthen the boom to 42 or 60 in.

Circle 40 on Card, Facing Page 49

## Magnesium Dockboards

A new line of light-weight, rugged dockboards has been introduced by Brooks and Perkins, Inc. Featured in the line are one-piece curbs with

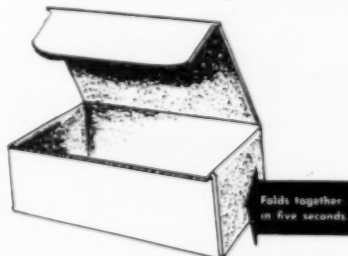


forged ends. There are no castings to break and no cast metal welded to wrought metal. Crowned construction maintains edges flush at both ends of the board. A safety tread provides extra traction.

Circle 41 on Card, Facing Page 49

## Corrugated Mailing Cartons

Mack-Chicago Corp. now manufactures corrugated mailing cartons designed to be crush-proof in the mails. Double and triple-thick construction at sides and ends, and special tuck-lock feature provide extra



strength needed for protection. The cartons are stored flat and can be set up in five seconds and sealed with only one piece of gummed tape for parcel post mailing. Forty sizes are stocked, ranging from 2 x 2 x 2 in. up to 13½ x 3½ x 3½ in.

Circle 42 on Card, Facing Page 49

## Stand-up Electric Truck

Easily accessible electrical contacts and hydraulic controls are featured in the Brute, latest addition of the Hustler Corp. to its line of stand-up

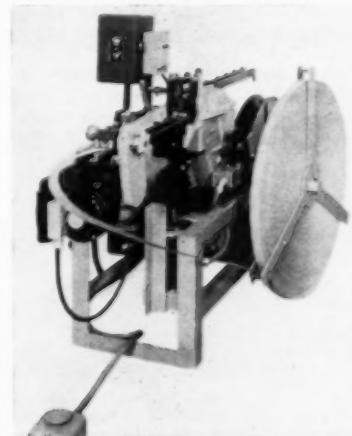


electric trucks. The new truck is furnished in 2000, 2500 and 3000 lb capacities at 24-in. load centers. Lift height is 98 in. The Brute offers four forward speeds and reverse. Top speed is 6½ mph. It turns on a 48 in. radius.

Circle 43 on Card, Facing Page 49

## Paper Feeder Unit

Signode Steel Strapping Co. has available an attachment for its Model M-2 power strapping machines which feeds a low cost chipboard paper underneath the strapping. It is intended



primarily for use in strapping small bundles of millwork. It gives low cost bundling, combining the strength of steel with a cushion of paper. Chipboard inside steel strap makes a protected package, automatically.

Circle 44 on Card, Facing Page 49  
(Please Turn Page)

# **DA NEW PRODUCTS and EQUIPMENT**

CONTINUED FROM PREVIOUS PAGE

## **Protective Paper**

Central States Paper and Bag Co., has introduced an improved formula for its Pro-Tex-Mor paper, to be known as SILiKone Pro-Tex-Mor. It



combines a special treatment of the kraft paper, plus an extra layer of silicone. Its super-smooth surface reduces friction and prevents scratches without the need for bulky and expensive padding.

Circle 45 on Card, Facing Page 49

## **Diesel Highway Tractor**

GMC Truck and Coach Div., General Motors Corp. announces a new lightweight Diesel highway tractor. This new unit has aluminum construction features giving it a curb weight of only 10,450 lb. This weight savings permits movement of addi-

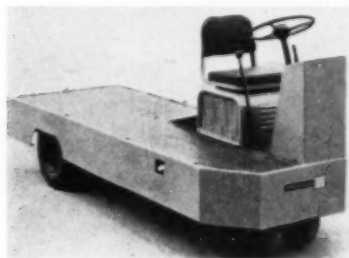


tional payload. Bumper-to-back-of-cab dimension is only 90 in., which permits the use of 35 or 40-ft trailers in 45 and 50-ft length-limit states. The GM 6-71SE Diesel develops 189 hp at 1800 rpm. Standard axles give the new tractor hauling power ratings of 30,000 lb GVW and 60,000.

Circle 46 on Card, Facing Page 49

## **Powered Platform Truck**

First of a new line of industrial materials handling equipment is The Prime-Mover Company's new platform truck. Recently field tested, the 4000-lb capacity truck is powered by an 18 hp, two-cylinder air cooled engine. It features automotive-type steering,



dual front wheels, heavy industrial drive wheels, a spin-proof differential, and hydraulic torque converter drive transmission. The Model F40 has a 42-in. wide freight bed that measures 78-in. long behind the engine enclosure. The space at the right of the engine can be used when handling bar stock, pipe, or lumber.

Circle 47 on Card, Facing Page 49

## **Self-Sealing Coupling**

A self-sealing coupling and shutoff valve unit which permits untended liquid transfer for any large tank loading operation is offered by Aeroquip Corp. The coupling permits the loading of tanks to a predetermined



level from a supply hose and the shutoff valve automatically stops the flow. One section of the coupling serves as the filling nozzle, and the other is mounted in the tank. Both coupling halves seal automatically upon disconnection, without spillage.

Circle 48 on Card, Facing Page 49

## **Drum Lifter**

Pucel Enterprises, Inc., is offering the Grizzly No. 235 drum lifter which can be operated by one man. It lifts vertically, stacks old and new drums, open or closed, with ease and positive

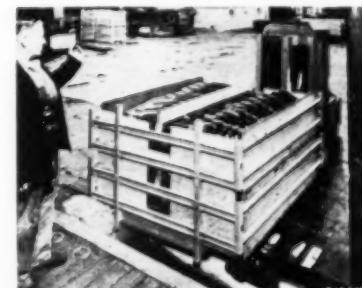


safe grip. It has 2000-lb capacity and can be attached and removed in seconds. It can be used with fork trucks, chain falls, cranes and hoists, and moves 55 and 30-gal drums.

Circle 49 on Card, Facing Page 49

## **Shipping Rack**

The Bathey Mfg. Co. has introduced a new shipping rack featuring expanding side bars called the S-L Rack. It facilitates handling unit-loads in standard double door box cars without need for dunnage or bars. This new



rack is designed to handle automotive panels and other large stampings; miscellaneous loads of boxes and cartons; and small parts of all types. Designed for use with a lift truck, the S-L rack comes complete with a pallet base.

Circle 50 on Card, Facing Page 49

## **Aluminum Electric Hoists**

The Coffing Hoist Div. of Duff-Norton Co. has a new line of lightweight aluminum electric hoists. Models range from 1/4- to 2-ton capacities, and feature mechanically interlocked push button controls. For convenience in pulling a trolley mounted hoist, the control cord incorporates a strain cable. The aluminum housing is constructed in sections to permit easy access to all parts. It is a simple operation to rechain the hoist or adjust the limit switch.

Circle 51 on Card, Facing Page 49



## Air-Powered Lift Truck

An air-powered, portable elevating truck designed for use in hazardous locations where maximum protection against fire or explosion-causing sparks is required, and where standard spark-proof motors cannot be used, has been introduced by The

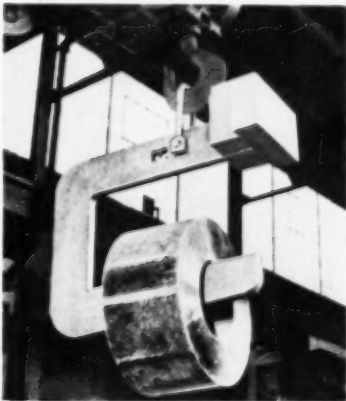


American Pulley Co. It is available in all models of both the DeLuxe and Champion series in the American Safeway line. Quick-disconnect couplings permit convenient, easy attachment to any air line in the plant. The new trucks are designed to handle middleweight loads up to 1500 lb. Lifts range up to 10 ft, 10 in. for a 1000 lb load and 7 ft, 10 in. for a 1500 lb load.

Circle 52 on Card, Facing Page 49

## 4 to 40,000 lb Crane Hooks

Cullen-Friedstedt Co. is offering a new line of standard design C hooks in capacities from 4,000 to 40,000 lb. A half-round bearing strip on the carrying lip provides greater bearing



on the coil and prevents scratching or marring high grade surfaces during pickup and handling. The new C-F hooks are accurately balanced to hang from the crane hook in the correct position for quick coil pickup and accurate spotting when the load is set down. Forged steel crane hook shackles are used to insure maximum strength and safety.

Circle 53 on Card, Facing Page 49

## Load Binders

The Crosby-Laughlin Div., American Hoist & Derrick Co. is offering the new Lebus all drop forged, heat treated load binders, with strength to break high test chain. Four sizes are available for use with chain up to  $\frac{3}{4}$  in. This binder is available three

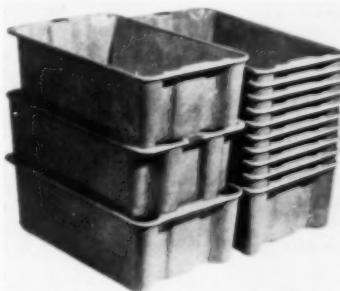


ways: with Lebus hooks permanently installed, with clevis hooks, or with links to which the user may attach an extension or special fitting. Handles are flanged at the leverage point to prevent spreading. Ball and socket swivels on hook assemblies provide a straight line pull and easy hook up.

Circle 54 on Card, Facing Page 49

## Tote Pans

Now available in 39 x 19 x 14 and 34 x 24 x 19 in., these two newly added tote pans make a total of seven different sizes available in the G. B. Lewis Co. Stack-n-Nest line. These



pans are molded in one piece of fiberglass reinforced polyester. They are designed to either stack or nest within their own dimensions, and cannot rust, rot, dent, warp, or soften. They are resistant to water, oil, and most chemicals.

Circle 55 on Card, Facing Page 49

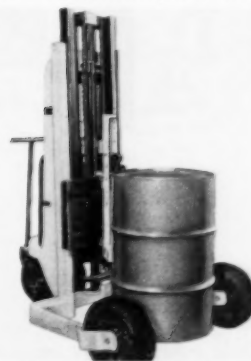
## Pallet Lifter

A 10,000-lb pallet lifter has been added to the line of the Cady Metal Fabricating Co., Inc. This unit has been developed to handle heavy materials such as bundles of sheet steel, heavy dies, and larger pallet sizes. It makes possible the handling of palletized loads by cranes and hoists in areas inaccessible to fork trucks.

Circle 56 on Card, Facing Page 49

## Lift Truck for Yards

The Big Joe Mfg. Co. has added a lift truck for yard operation to its



line of industrial trucks. The Yardmaster 29, using pneumatic tires, can be manually propelled with ease over rough surfaces. It has a telescopic lift.

Circle 57 on Card, Facing Page 49

## Refrigeration Curtains

Now available for refrigerated trucks and trailers are money-saving refrigeration curtains made by Seattle Tent and Awning Co. They are made of heavy-duty 16-oz neoprene



impregnated nylon. The material is silvered on the outside to reflect warm air away from the opening. Men and products move through the doorway simply by pushing the panels aside. Weighted pockets in each panel cause them to close quickly. They will not absorb moisture nor odors.

Circle 58 on Card, Facing Page 49

## Engine Exhaust Tester

A dual-purpose carbon monoxide tester which makes it possible to detect CO concentrations in the engine exhaust stream as well as in room atmospheres is being produced by Oxy-Catalyst, Inc. The direct-reading unit shows whether carbon monoxide is above or below safe concentration levels. The new device, called the Oxy-Monoxo, will detect carbon monoxide in the approximate range of 100 to 1000 parts per million.

Circle 59 on Card, Facing Page 49  
(Please Turn Page)

# **DA NEW PRODUCTS and EQUIPMENT**

CONTINUED FROM PREVIOUS PAGE

## **Transfer Bridge**

A new transfer bridge providing strength and safety for materials handling between docks and buildings is manufactured by Autoquip Corp.

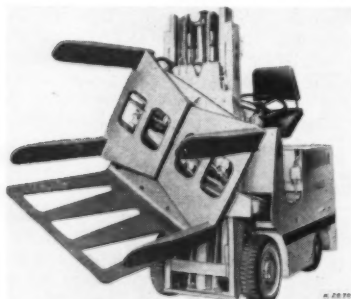


Hydraulically actuated rigid mechanical supports automatically lock into position when the transfer bridge rises. Maintenance costs are said to be low because of simplicity of design and operation.

Circle 60 on Card, Facing Page 49

## **Liquid Container Inverter**

A lift truck attachment which inverts containers of liquid in storage to prevent settling has been developed by The Yale and Towne Mfg. Co. Developed to handle palletized loads of



containers, it will be of particular benefit for companies storing soap, paints, and foodstuffs. The attachment uses two pairs of hydraulically operated forks. The lower pair fits into the pallet and the upper pair brings an empty pallet down on the top of the load.

Circle 61 on Card, Facing Page 49

## **Lift Operates from Forks**

The Moto-Truc Co. has announced a new control arrangement which permits the operator to control the steering, lift, and travel of a lift truck from a position on the load forks. This device can be used for sorting large bulky objects in storage



racks, for handling many types of loads not on pallets, and for maintenance of lights and other equipment above floor level. The equipment can be used on either a standard outrigger truck or any standard high lift made by Moto-Truc. The operator's platform adds 14 in. to the overall length of a standard truck and requires a minimum of 36 in. overall width.

Circle 62 on Card, Facing Page 49

## **Manually Operated Stapler**

A new stapler which manually closes an average shipping case for less than one third of a cent has



been introduced by Container Stapling Corp. It seals filled containers from the outside and also sets up flat cartons. It is entirely constructed of stainless steel.

Circle 63 on Card, Facing Page 49

## **Chisel Forks for Lift**

The Raymond Corp. now is manufacturing chisel forks for use on its narrow-aisle electric reach fork trucks. Particularly designed for warehouses handling appliances and other large items, the thin, tapered



forks extend out and slide under a carton, picking it up. The forks are retracted for the carry. To make pick-up of appliances easier, 1-in. dunnage strips are fastened to the bottoms of crates and cartons. Besides saving space through permitting narrow aisles, this system of handling saves the space normally used by pallets.

Circle 64 on Card, Facing Page 49

## **Hydraulic Bin Dumper**

The Elwell-Parker Electric Co. is producing a hydraulic bin dumping attachment for its fork trucks in the 2000-10,000 lb capacity range. This

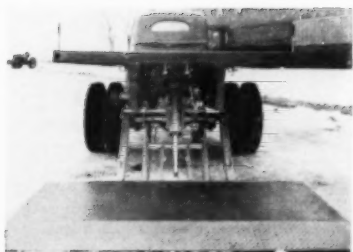


permits the use of drop-bottom boxes which have an important advantage over skid or pallet boxes. The drop-bottom boxes may be loaded quickly by mechanical means then dumped onto conveyors, floors, hoppers, or bins.

Circle 65 on Card, Facing Page 49

## **Elevating Tail Gates**

Longer life and lower maintenance are predicted by the Anthony Co. for its new series of elevating tail gates for trucks. The hydraulically operated gates enable the driver to load or un-

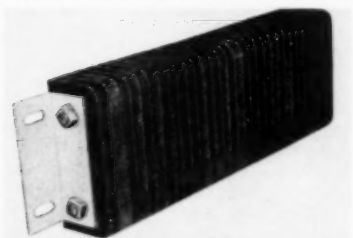


load a shipment from his truck even where there is no loading platform. The lift gates are made in capacities of 2000, 3000, and 4000 lb. A new feature is the road shock arrester which prevents up and down movement when the truck is in transit. This eliminates rattle and scuffing of the rear doors and reduces wear.

Circle 66 on Card, Facing Page 49

### Adjustable Dock Bumper

An adjustable dock bumper specially designed to provide both direct and angular thrust protection for docks



and trucks has been developed by the Koneta Rubber Co., Inc. It can be installed on new or old docks and on self-leveling dock installations.

Circle 67 on Card, Facing Page 49

### Van Body Truck Series

International Harvester has expanded its line of trucks with Metro bodies. The new additions include several van bodies, a new aluminum body, and a body with a new metallic exterior finish. Increased cubic capacity is offered in three new all-



steel models. An International AM-160 chassis (14,000-16,000 gvw) is used for 12-ft 7-in., 14-ft 7-in., and 16-ft 7-in. bodies. Capacities are 564, 644, and 724 cu ft, respectively. Two new, smaller bodies have been introduced for operations that require high cubic capacity for light, bulky loads. Available in 9-ft 6-in. and 10-ft 6-in. lengths, they have capacities of 375 and 415 cu ft.

Circle 68 on Card, Facing Page 49

### Kits for Building Cranes

You can build your own underhung crane using factory packaged kits offered by the Shaw-Box Crane and Hoist Div. of Manning, Maxwell & Moore. These packaged cranes are available in capacities from ½ to 10

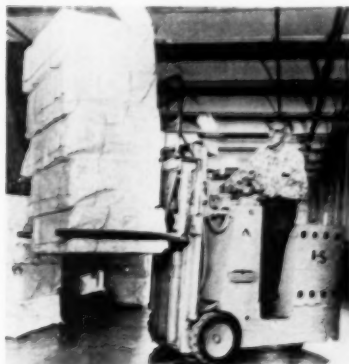


tons. Spans are up to 50 ft. Each kit includes two completely assembled end trucks, required cross shaft bracket, bearing assemblies, shaft couplings, 20-ft hand chain, and chain wheel complete with guide. Instructions for assembling are included.

Circle 69 on Card, Facing Page 49

### Clamp Attachment for Lift

Non-palletized loads, as well as loads on skids, pallets, and in bins, can be handled easily and efficiently by a clamping attachment made by Lewis-Shepard Products, Inc. It is



especially effective in handling such items as bales or cases. To handle pallets or skids, the operator simply leaves the clamp in the closed position and inserts the clamping arms into the pallet or skid.

Circle 70 on Card, Facing Page 49

### Tilt-Cab Design Change

Diamond T Motor Truck Co. has announced a change in its tilt-cab series, effective with current production. Four stainless steel crossbars have replaced the cast aluminum grille formerly used. The restyled front provides a reduced weight and lower maintenance. The tilt-cab Dia-

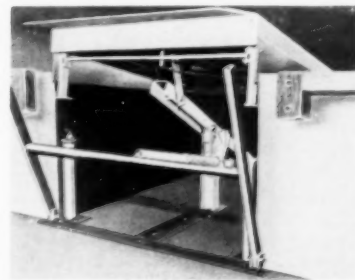


mond T's are made in gasoline and diesel models with a wide range of capacities.

Circle 71 on Card, Facing Page 49

### Automatic Dock Leveler

Rugged construction and a simple counterbalance design are claimed for Globe Hoist Company's latest mechanical dock leveling ramp. The dockboard is powered by the backing

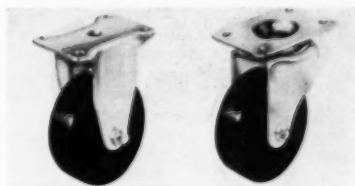


up of the truck. As the truck backs up it strikes two upright push bars which trigger the counter balancing mechanism and lowers the 8 x 6-ft ramp. When not in use it may be leveled with the surrounding dock area to permit free cross travel. It has a roll-over and cross-over load capacity of 20,000 lb.

Circle 72 on Card, Facing Page 49

### 'King-Pinless' Caster

A new, radically different caster developed by The Rapids-Standard Co., Inc., has eliminated the conventional king-pin. The pin, frequently the first thing to fail on a caster, has been replaced by a single ball raceway that performs several functions.



It joins the top plate to the yoke while also acting as the load thrust bearing.

Circle 73 on Card, Facing Page 49

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**FREE**

# LITERATURE

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## Air Freight Map

A new map showing 503 principal airport cities in the United States along the nation's major air freight network has been prepared by **Emery Air Freight Corp.** The major Canadian cities on the air freight network and the six gateways in the U. S. through which international air freight flows to and from Europe, Central and South America, the Far East and Alaska also are shown.

Circle 75 on Card, Facing Page 49

## Label Design Kit

**Allen Hollander Co., Inc.**, is offering a Do-It-Yourself label kit containing detailed instructions for designing labels with a wide choice of standard borders, shapes, type styles and color combinations. A total of 41 different border designs are illustrated in actual size and color.

Circle 76 on Card, Facing Page 49

## Lift Truck Case Study

**Hyster Co.** is offering a new case study showing the use of lift trucks at **Chattanooga Transfer & Storage Co.** This report shows how one commercial warehouse improved its handling efficiency 500 per cent.

Circle 77 on Card, Facing Page 49

## Truck Selector Guide

An industrial truck selector guide which shows how to set up materials handling systems in relation to specific plant layouts and the kinds of products produced is offered by **Automatic Transportation Co.** The brochure describes 20 basic industrial truck types and gives specifications of 100 different models, indicating how each is applicable to particular handling requirements.

Circle 78 on Card, Facing Page 49

## Materials Handling Equipment

**Conveyor Systems, Inc.**, has available a new brochure illustrating and describing their auxiliary material handling equipment. It includes such items as clamp roll cars, work benches, portable steel racks, trucks and other equipment for in-plant.

Circle 79 on Card, Facing Page 49

## Pneumatic Steelstrapper

A booklet on the A4 pneumatic steelstrapper is available from **Acme Steel Co.** It shows typical applications, pictorial operating instructions, and specifications on the new tool. The strapper provides power for every operation after the strap is inserted. Tensioning, sealing and cutting all are done by air power.

Circle 80 on Card, Facing Page 49

## Handling Equipment

A new 21-page booklet describing the complete line of **Republic Steel's** materials handling equipment is available. The booklet illustrates such steel products as: skids; box and skid units; boxes for roll-over and bottom dumping; bar carriers, collapsible boxes; special purpose units—open end boxes, tote pans and caster-equipped boxes; painted and galvanized boxes; stacking skids; pallets; and drum racks.

Circle 81 on Card, Facing Page 49

## Heavy-Duty Carriers

A six-page folder listing condensed specifications for their complete line of heavy-duty material carriers is offered by **Gerlinger Carrier Co.**, subsidiary of **Towmotor Corp.** Outlined in detail are the design, construction and operating features of 12 different models with load-carrying capacities ranging from 12,000 to 60,000 lb. Seven new four-page folders giving complete equipment specifications for individual models also are available. These folders cover operating data, diagrams showing over-all dimensions, and turning radii.

Circle 82 on Card, Facing Page 49

## "Walkie" Comparison Chart

Purchasers of low-lift and high-lift electric "walkie" materials handling trucks can evaluate different makes and models through a comparison chart prepared by **Lewis-Shepard Products, Inc.** The chart lists some 30 different points of comparison for both high-lift and low-lift models.

Circle 83 on Card, Facing Page 49

## Heavy Duty Handling

**Massey-Ferguson Industrial Div.** has prepared a catalog describing and illustrating their power-matched industrial equipment. Specifications and detailed descriptions of their **Work Bull** utility tractor, tractor loader, and fork lift truck with multiple attachments are included.

Circle 84 on Card, Facing Page 49

## Lift Truck Attachments

**Little Giant Products, Inc.** announces a complete catalog of mechanical and hydraulic lift truck attachments illustrating 26 ways for owners to get more use from their lift trucks.

Circle 85 on Card, Facing Page 49

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## BOOKS

### Conveyor Terms and Definitions

The Conveyor Equipment Mfrs. Assn. has published an up-to-date and enlarged edition of "Conveyor Terms and Definitions." The 96-page book defines more than 1200 conveyor types, parts, and related equipment. It is illustrated with more than a hundred line drawings. "Preferred" terms are accompanied by the definition and other commonly used terms are related to them by an extensive system of cross-indexing. Major product, safety, and sanitation standards are listed with their sponsoring organizations.

A copy of this book, priced at \$2, may be obtained from **Conveyor Equipment Mfrs. Assn.**, One Thomas Circle, Washington 5, D. C.

### Port Handbook

The New York Port Handbook for 1958 is available. This 192-page directory is a compilation of information on such subjects as transportation, marine terminals, warehousing, dry docks, freight forwarders, custom house brokers, banking, insurance, freight conferences, stevedoring, government, etc. Emphasis is placed on specific business firms and governmental agencies and the services they render trade and transportation at the Port of New York.

Copies of this handbook, priced at \$2.50, can be obtained from the **Port Handbook Co.**, 225 Lafayette St., New York 12, N. Y.



## Fork Truck Rodeo Guide

A 50-page guidebook on conducting fork truck rodeos has been prepared by the Los Angeles Chapter, American Material Handling Society. To assist other organizations and AMHS chapters in setting up rodeo programs, the guidebook contains sample correspondence, entry forms, course layouts, sample examinations for contesting, operating rules, score sheets, etc.

Circle 86 on Card, Facing Page 49

## Industrial Tractor Shovel

Yale Materials Handling Div. of The Yale & Towne Mfg. Co. has published a 20-page brochure on its Y-18 tractor shovel. Among the features discussed are automatic torque transmission, safety curve arms, 45-deg bucket tip back for better loading, and full 6-ft dumping clearance.

Circle 87 on Card, Facing Page 49

## Industrial Truck Data

The first Annual Product Review Issue of its external house organ, The Lift, is offered by The Elwell-Parker Electric Co. This issue covers 86 items on specific trucks plus new and existing free literature available. Illustrated and described are fork trucks, high and low-lift platform trucks, crane trucks, and a wide variety of special models. Truck attachments also are covered.

Circle 88 on Card, Facing Page 49

## Piano Hinge Conveyors

Prab Conveyors, Inc., has prepared a brochure on their piano hinge steel belt conveyors. Formed from close tolerance stampings, they are available in various thicknesses and widths. This booklet covers general information on steel belts and applications in the handling of press scrap, turnings, steel parts, chips and parts feeders.

Circle 89 on Card, Facing Page 49

## Building Insulations

"Fiberglas Insulations for Industrial and Commercial Metal Buildings," is the title of a new publication offered by Owens-Corning Fiberglas Corp. In 12 pages, the publication illustrates and describes use of Fiberglas, flexible and rigid metal building insulations.

Circle 90 on Card, Facing Page 49

## Palletainers

Union Steel Products Co. is offering an 18-page catalog on palletainers for all types of materials handling. The catalog contains a section covering models designed for warehouse use, a section covering Hi-Lode palletainers designed for the vertical storage of parts and equipment, Bulk-Lode models with dump-type endgates, and bearing plate models are described in detail.

Circle 91 on Card, Facing Page 49

## Dock Boards

A four-page folder describing the F. H. Langsenkamp Co. aluminum dock board is being offered. The manufacturer claims that the lightweight aluminum used in these dock boards is alloyed to achieve a tensile strength of 65,000 lb psi. A 24 x 48 in. dock board only  $\frac{3}{4}$  in. thick can support a 12,000 lb load. These new dock boards feature a skid-proof surface.

Circle 92 on Card, Facing Page 49

## Truck Attachments Guide

A handy checklist that shows the special attachments, accessories and truck options available with each industrial truck is included in a new catalog offered by Hyster Co. The catalog includes pictures and specifications of the complete line—lift trucks from 1000 to 20,000 lb cap., straddle carriers, yard cranes, and platform trucks.

Circle 93 on Card, Facing Page 49

## FILMS

### Business Management

More than 400 U. S. Government sound motion pictures for use in business management courses and employee training programs are described in a new free catalog offered by United World Films, Inc.

Films for management groups include such subjects as the employment of disabled workers, methods of instruction and interviewing, supervision of workers, work simplification, merchandising, materials handling, production control, sanitation and safety. Employee training films deal with subjects on precision measurement, blueprint reading and machine shop work.

Circle 94 on Card, Facing Page 49

### Materials Handling Films

The Industrial Truck Div. of Clark Equipment Co. has published a brochure describing 17 motion pictures depicting successful materials handling systems in lumber, railroad, trucking, paper, bottling, grocery and other industries. Also available are a film on safety training for fork truck operators and a film on industrial applications of straddle carriers. All films are 16 mm., with running times of 8 to 29 minutes.

Clark films are available on a loan basis to industrial and commercial firms and educational institutions, at no charge other than return transportation.

Circle 95 on Card, Facing Page 49



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## Platform Cart

SI Handling Systems, Div. of Safety Industries, Inc., has prepared a Data Sheet on their EC carts. The easy-handling cart was designed for manual and dragline operations.

Circle 96 on Card, Facing Page 49

## Mechanical Dunnage

Allied Steel & Conveyor has prepared a booklet describing their Spar-ton Tri-Belt System of freight car loading. It consists of the installation of a system of perforated horizontal rails along the inside walls of the freight car, and of using car-width cross-members to be locked into these rails anywhere in the car.

Circle 97 on Card, Facing Page 49

## Auxiliary Equipment

Conveyor Systems, Inc., has prepared a new booklet describing their clamp roll carts, work benches, portable steel racks, trucks and other equipment for in-plant use.

Circle 98 on Card, Facing Page 49

## Front End Rebuild Kit

Truck front end sections for rebuilding or modernizing any make or model of heavy-duty truck are described in a catalog offered by International Harvester Co. Increased payload space and lighter chassis weights are profitable features which can be brought to old trucks with modernizing rebuild kits. In cab-over-engine models, bumper-to-back-of-cab dimensions of 50 or 72 in. are available, or 72 and 80-in. with sleeper cabs. Kit components include cab with seats, frame, front axle, front brakes, fuel tank, clutch control, cooling system with shutters, electrical system with instruments, exhaust system, steering system, paint.

Circle 99 on Card, Facing Page 49

## Palletless Handling Study

How an appliance manufacturer was able to meet its fluctuating production schedule through the conversion to a fleet of electric industrial trucks is the subject of a case history bulletin available from Lewis-Shepard Products, Inc. This four-page presentation is illustrated with action photos taken in the plant.

Circle 100 on Card Facing Page 49

# Warehouse Modernization On the Industrial Front



New Johnson and Johnson buildings are (l to r) shipping center, baby products plant, and bandage plant

Two parallel dragline loops speed trucks carrying orders through the 385,000 sq ft J&J shipping center



**I**NDUSTRY, after many years of considering storage a fixed overhead, is now busy modernizing its warehouses.

Rather than developing new methods, industries in recent programs have improved techniques already in use. Many changes may be innovations for a particular company. However, most have been tested earlier by other firms.

The goal of bringing warehouses up to the efficiency level of production has caused industry to restudy every phase of warehousing operation. Location, construction methods, layouts, handling systems, storage, protection, and other services have been improved.

For many companies, modernization has meant new construction. Old multi-story warehouses have given way to new single story buildings planned around mechanical handling equipment. The trend in location is running toward a warehouse adjacent to the company plant or toward a central facility serving several plants.

## New Buildings

New construction was the solution decided on by Johnson and Johnson for its distribution problem. Along with two new plants—one producing bandages and the other baby products—they built a new shipping center to serve all divisions of the company. The three buildings occupy a 300-acre site at North Brunswick, N. J. Here shipping for all domestic and foreign markets, work formerly handled in an Edison Township, N. J., building, is carried on.

The three main buildings at North Brunswick are arranged diagonally on the site. They are connected by smaller office and laboratory structures. This diagonal location of the major buildings allows each to take its logical place on the 3600-ft dragline which unites the two plants and warehouse. It also permits each plant and the shipping building to have separate rail spurs and truck docks. Any of these large, single-story buildings can be expanded without moving the spurs.

The angle of the buildings and window arrangement were selected to take advantage of natural light. In the warehouse, where palletized goods will be stacked to within a few feet of the roof, horizon-

New buildings and improved equipment are providing the solutions to many of the distribution problems of industries. Here are a few recent developments

By Robert Warner, *Associate Editor*

tal ribbon sash has been placed high under the eaves.

The main buildings have structural steel frames with concrete block exterior walls finished in white stucco. The shipping center, a 285,000 sq ft structure, has a stacking height of 18 ft. Floors are reinforced monolithic concrete with armored grid in the motor vehicle section.

Shipping center and traffic department offices are located in an extension out of the line of future expansion. Outgoing truck orders are carried by two parallel in-floor dragline loops 2000-ft long. Each line is equipped with a cat-chain drive, powered by a 10-hp motor.

#### Other Moves

Three other companies faced with the problem of modernizing an old multi-story warehouse or moving to a single-story building chose the latter.

May Brothers Co., Minneapolis wholesale grocery company, has moved from a multi-story building to a new 186,180 sq ft warehouse where it can make best use of its electric powered materials handling equipment. The company reports unloading time down 40 per cent, storage space increased by stacking 100 per cent, time used in filling orders reduced 35 per cent, and damage to merchandise virtually zero.

High handling costs in a 7500-sq ft, two-story warehouse and high construction costs for "conventional" buildings made Clay Equipment Corp., of Cedar Falls, Iowa, choose a pre-engineered warehouse. The 10,000 sq ft, trussless warehouse is a product of the Wonder Building Corp. of America. It consists of curved, corrugated sheets of galvanized steel, factory-engineered to form self-supporting arches. In it, Clay stores a wide range of metal farm building parts, such as windows and ventilators. An innovation in this warehouse is the substitution of reinforced translucent fibreglas sheets for standard steel sheets. These act as skylights.

#### Elevator Problem

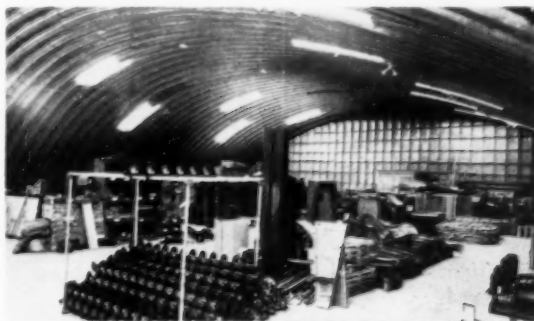
Acme Paper Company's problem in San Francisco was a 40-year-old, three-story warehouse with only  
(Please Turn Page)



May Brothers, using electric trucks, doubled goods stored in given space



Wyeth Laboratories, for all its branch warehouses, has installed an Alvey-Ferguson live storage system.



Pre-engineered, trussless Wonder Building built for Clay Equipment Corp. features fibreglas "skylights"

A "wooden storage box system" by Rathborne, Hair and Ridgway, stores 17,000 parts for Hardware Products Co.



## ... Warehouse Modernization

(Continued from Preceding Page)

one small elevator. To move a carload of 1000 cases of paper towels to the third floor required 40 elevator trips. Two men worked ten hours. The answer was found in a one-story warehouse on Tennessee St. The structure consists of 30,000 sq ft. The stock is palletized and moved by two fork lifts. Labor costs have been cut by one-third. Storing the carload of paper towels now takes three men two hours.

Bigelow Rugs and Carpets, in building a new warehouse at South Hackensack, N. J., eliminated warehouses in New York City and Philadelphia. The site of the one-story, brick-faced building was selected for its nearness to the New Jersey Turnpike, New York Thruway, George Washington Bridge, and major rail lines.

A similar centralization of distribution will be achieved by the Strevell-Paterson Hardware Co. The company recently started construction of a 170,000 sq ft warehouse in Salt Lake City, Utah. Two company-owned warehouses and one leased building will be eliminated upon completion of the building on Sixth West between 13th and 17th South. This location will be only two blocks from the new Fourth West Freeway, when the highway is completed. It is situated along the tracks of the Denver and Rio Grande Western.

### Modern Equipment

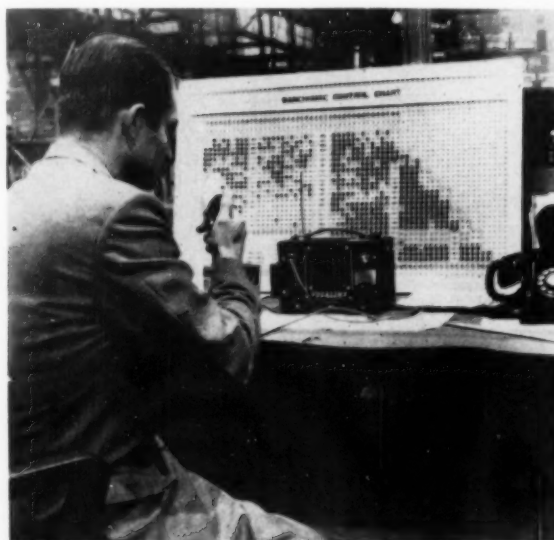
The industrial warehouse is becoming more than just space. Many consist of space equipped for or conditioned to the particular products which are to be stored.

The most widely used storage system in modern warehouses still is stacking of pallet or unit loads. Many companies, however, can make better use of their space by storing on some type of shelving or racks.

Even though it handles most of its products on pallets, May Brothers has found that racks are required for reaching top cube in grocery storage.

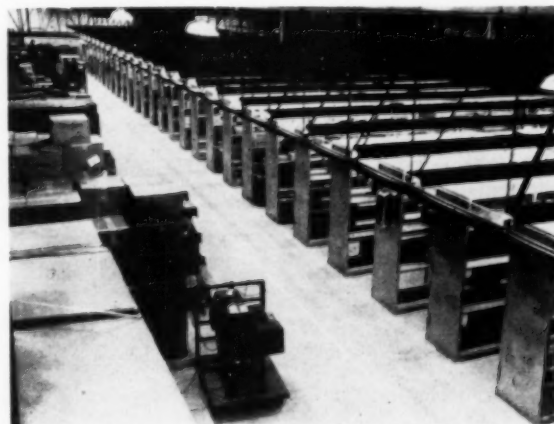
Most shelving installations are steel. But one company, Hardware Products Co., of Sterling, Ill., recently made an unusual installation in wood. With over 17,000 parts to be stored, the company needed flexible, low cost shelving. It selected a system comprised of 700 wooden storage boxes, each slotted at five positions on each end to hold shelves at various heights. The boxes can be stacked ceiling high.

Most warehouses assign an area to stacking of pallet loads and use a special shelf area in another



Federal Pacific Electric Co., at its new facilities uses this control chart to show empty and full racks

Rogers Drug Co. stores case goods to left of aisle and shelf stock at right. Overhead dragline pulls trucks

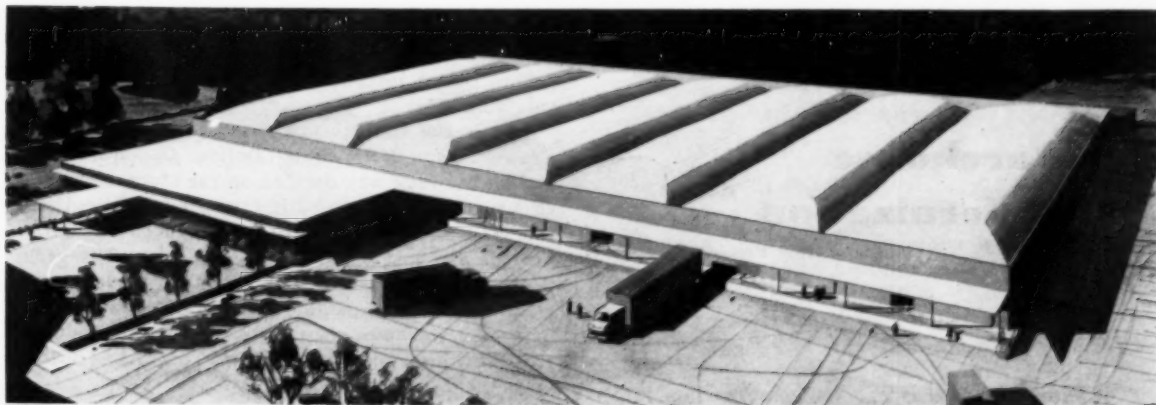


part of the building for broken lots. Rogers Drug Co., in its new warehouse at Lindenhurst, L. I., N. Y., has applied a new concept. Cases of merchandise are stored directly adjacent to shelf stock. On one side of the aisle are the shelves. In a storage bay across the aisle are stacked cases of the same products.

Osborn Manufacturing Co. recently doubled the storage capacity of its Machine Division warehouse in Cleveland. This was accomplished by adding a second tier of bins. The second tier of bins is 8-ft high and 110-ft long. They are stacked on bins of identical height. Steel catwalk aisles run between the bin tiers and along the outside. A stand-up type fork truck is used to raise tote pans of bushings, lock washers, nuts, and bolts to the upper level.

A new method of storing and keeping track of





Strevell-Paterson Hardware Co. built its 170,000 sq ft warehouse near Salt Lake City's 4th West Freeway



Left: Oxy-Catalyst exhaust purifier (arrow) permits Ruppert Brewery to use gasoline motors in closed area

Crown Cotton Co. cut construction costs by using this A-F live storage system. Two towers give access to rack



hundreds of different size boxes has been devised for all branch warehouses of Wyeth Laboratories.

The new system uses live storage racks. (For more information of live storage see Page 56.) It is designed around the number and size of packages, term of storage, and frequency of need for specific items. Advantages are first-in, first-out inventory control, centralized order picking for greater speed, and separation of the picking and replenishing operations.

#### Improved Control

Excellent control, with its added benefit of speed, has been developed by the Federal Pacific Electric Co. in its new warehouse in Newark, N. J. Key to this control is a chart which provides a quick visual check of the position of goods on hand and space

available. Different colored pegs are used to indicate one, two, or three empty rack locations. Movement of industrial trucks with palletized loads is directed from the control station by two-way radio. All of the 65,000 sq ft in the warehouse is used for rack and bin storage.

Creating ideal conditions—air conditioned and dehumidified—permits the Penco Metal Products Division of Alan Wood Steel Co. to store unpainted parts at its Oaks, Pa., warehouse. Components of steel lockers, shelving, and cabinets are stored at a precisely controlled temperature and humidity to prevent rusting. Eliminating color reduces the number of lots to be stored. When an order is received, the parts are painted to the buyer's specifications, assembled, and shipped.

*(Please Turn Page)*

## ... Warehouse Modernization

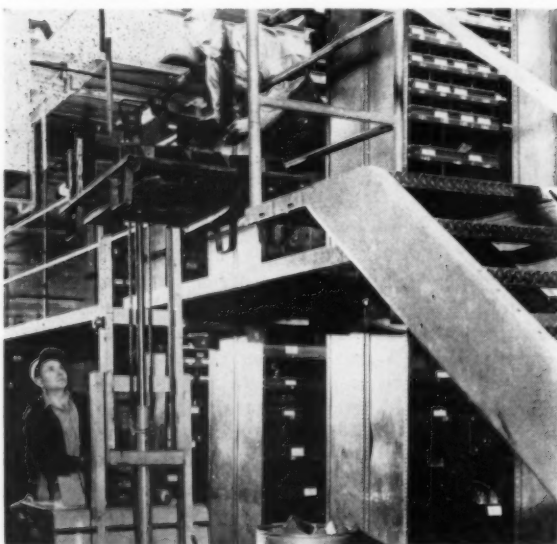
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The automated warehouse—the giant machine into which products move, are stored, and are shipped to fill an order placed electronically from a distant city



Penco Metal Products, by storing unpainted metal parts in air conditioned warehouse, reduces number of lots

Stockman loads tote pans on Automatic fork truck from second tier of bins at Osborn Manufacturing

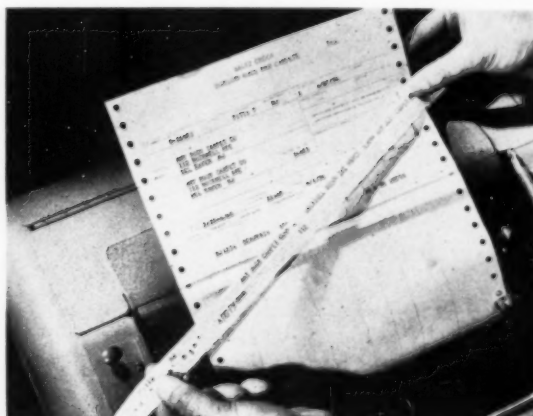


—remains a goal toward which to work rather than a reality.

Two recent installations point in the direction of this goal.

One is the live storage rack system installed by Crown Cotton Mills in its Dalton, Ga., warehouse. Before the rack was decided on for storage of yarn, Crown had planned to build a larger building. Using the rack, the building size was reduced enough to provide the cost of the storage system. The racks consist of many sections of gravity roller conveyor mounted in an adjustable rigid frame. These 60-ft long conveyor lanes are sloped so that packages move freely to the front for selection. The rack is loaded at one end, unloaded at the other.

Loading and unloading is performed from two towers, one at the front and one in the rear. Each



Perforated tape, cut while Bigelow teletype prints an order, is transmitted to shipping department

Carpet in Bigelow cut-order bin is moved by ram to center of floor where desired yardage is cut off



traverses a face of the rack on rails. An elevator in each tower carries packages to and from the rack. An operator on the elevator transfers the packages. When the elevator is in the "down" position at the end of the track, the cartons are transferred to a roller conveyor which takes them to the shipping area.

The second installation showing the advance toward automation is a new order filling system in the West Coast warehouse of Gallo Sales Co. It consists of a bank of 66 gravity roller conveyor storage lines in a three-deck arrangement. Cases of various commodities are stored on these, one commodity to a line.

At the lower end of each line is an escapement which allows one case at a time to flow on to one of three belt conveyors which run at right angles to the gravity conveyors. The escapement is operated



Console operator at Gallo controls order selection on three-level storage system by Matthews Co.



Three belts at Gallo converge vertically at a wide roller conveyor, resulting in one line

from an electronic console, on which entire orders are registered then filled when the operator pushes a master control switch. The system contains about 5000 ft of conveyor and stores about 4000 cases.

### Fork Truck Problems

For most of these new single-story warehouses, the fork lift, with its ability to stack, has become the key piece of materials handling equipment. Such was the case at May Brothers and Acme Paper. Modernization at one installation, the Jacob Ruppert Brewery warehouse in New York, was not the result of installing a new handling system, but the result of fitting equipment to meet a special need.

General Traffic Manager J. G. Wolfer was assigned this problem: A 20-truck fleet was needed. Gasoline powered trucks would cost less initially, particularly since Ruppert would be operating trucks about 16 hours per day. Electric trucks, in addition to representing a greater initial investment, would require extra batteries. The company felt that gasoline powered trucks were better for climbing the building's two 12-degree ramps.

One difficulty stood in the way of gasoline power—the possibility of exhaust fumes endangering personnel. Wolfer recommended gasoline lift trucks fitted with catalytic exhaust purifiers. The purifiers, installed in place of the trucks' regular mufflers, eliminate 95 per cent of the carbon monoxide. Wolfer ordered 20 fork lifts of 3000 lb capacity all fitted with purifiers.

Many of the newer warehouses are designed around materials handling systems other than fork trucks. This is particularly true where the warehouse adjoins a manufacturing plant and the lines can be extended into the distribution center.

Such is the case with Johnson and Johnson's 3600 ft inter-plant in-floor dragline and the two parallel, 2000-ft draglines in the shipping center. All handling of finished goods between the manufacturing buildings and shipping centers moves over the longer dragline.

The same dragline also is used within buildings to deliver materials from one manufacturing operation to another. It moves at a constant speed of 60 ft per minute. It pulls specially designed trucks which hold one pallet load of finished products.

A 20-position electronic signal switch on each truck, pre-set when the truck is loaded, allows selective delivery to the shipping center or to any of a number of intermediate stations along the conveyor path. When the truck arrives at the selected station, a small electric oscillator beneath the floor rings a bell to alert workmen at the receiving station.

An additional feature of the conveyor system is an electronically controlled switch. Empty trucks set to trigger this switch are routed into the return line and circulated in the manufacturing buildings near the points of loading.

While the basic purpose in the design of these new industrial warehouses has been to provide economical distribution, some companies have built into their warehouses facilities to give added service.

(Please Turn to Page 95)

# What Next on Wheels— The Story of Live Storage

**L**IVE storage, developed about 20 years ago, today is branching out in many directions with custom-built installations designed around the product and the order picking pattern.

Most live storage systems have the following advantages: first in-first out order picking, high space utilization, less need of supervision, improved employee efficiency, speed in order picking, simplified inventory, reduced traffic congestion, and excellent protection of products. Since each system is designed for a specific operation, each has, in addition, other advantages.

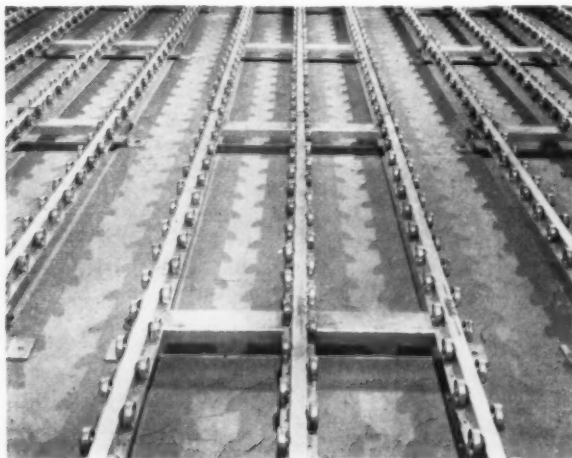
In each case, the equipment maker starts with the industry's problem and designs the equipment as the best overall solution. The use of live storage is almost always tied in with other operations such as production, shipping, accounting, order compiling, and sorting. Many factors affect the final size and type of rack. These include the cost of the building, cost of labor, average size of orders, distribution of specific items within orders, and methods of billing.

While most live-storage systems consist of racks

which give storage on several levels, the new installation at the Columbus, Ohio, plant of Westinghouse is quite different. The entire floor of the storage area is covered with wheels, serving as a one-deck system. Components for appliances, packaged in large corrugated cartons, are stacked on 10-gage sheet metal pallets. Pallet loads are stacked in assigned lanes by fork trucks and are pushed along the lanes by trucks at the feed-end. At the other end, items are removed manually.

With one exception, the installations shown here store products ready for customers or materials ready for production. In these, each line contains a single product. The RCA warehouse operates differently. The company makes daily shipments of phonograph records to about 70 regional distributors. An 80-lane rack permits the firm to assign each lane to a specific destination. Items picked from storage are deposited in the lane by destination where they remain until the truck arrives. At that time, simply by pressing a button, the entire contents of the lane is mechanically transported to the loading area. •

Westinghouse has covered its warehouse floor with a one-deck rack on which packaged parts are stacked on pallets



All stored items at Westinghouse move in one direction. Loads arrive on fork truck and are pushed out manually





Live - storage systems, designed to product and order requirements, can improve efficiency of warehouse order picking and systematize marshalling of outbound orders



Many different types and sizes of kitchen cabinets are stored here



Gaudio Brothers fills orders for about 10,000 cartons per day in frozen foods

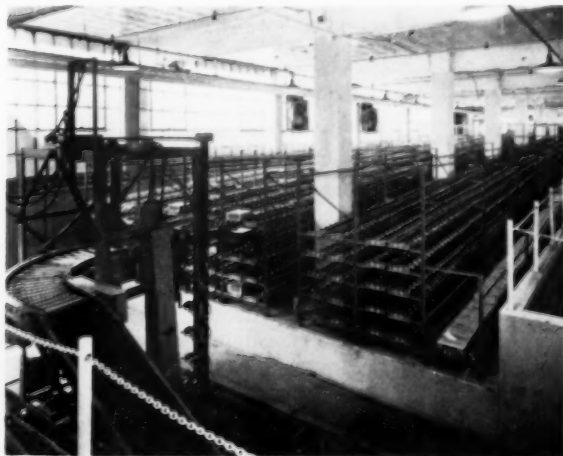


Rollers instead of skate wheels are used for storing high density products like metal parts



Thousands of greeting cards are within easy reach of American Greeting Card Co. employees who fill orders

RCA marshalling rack stores orders by destination. The triple-rail design permits mixing package sizes in lane

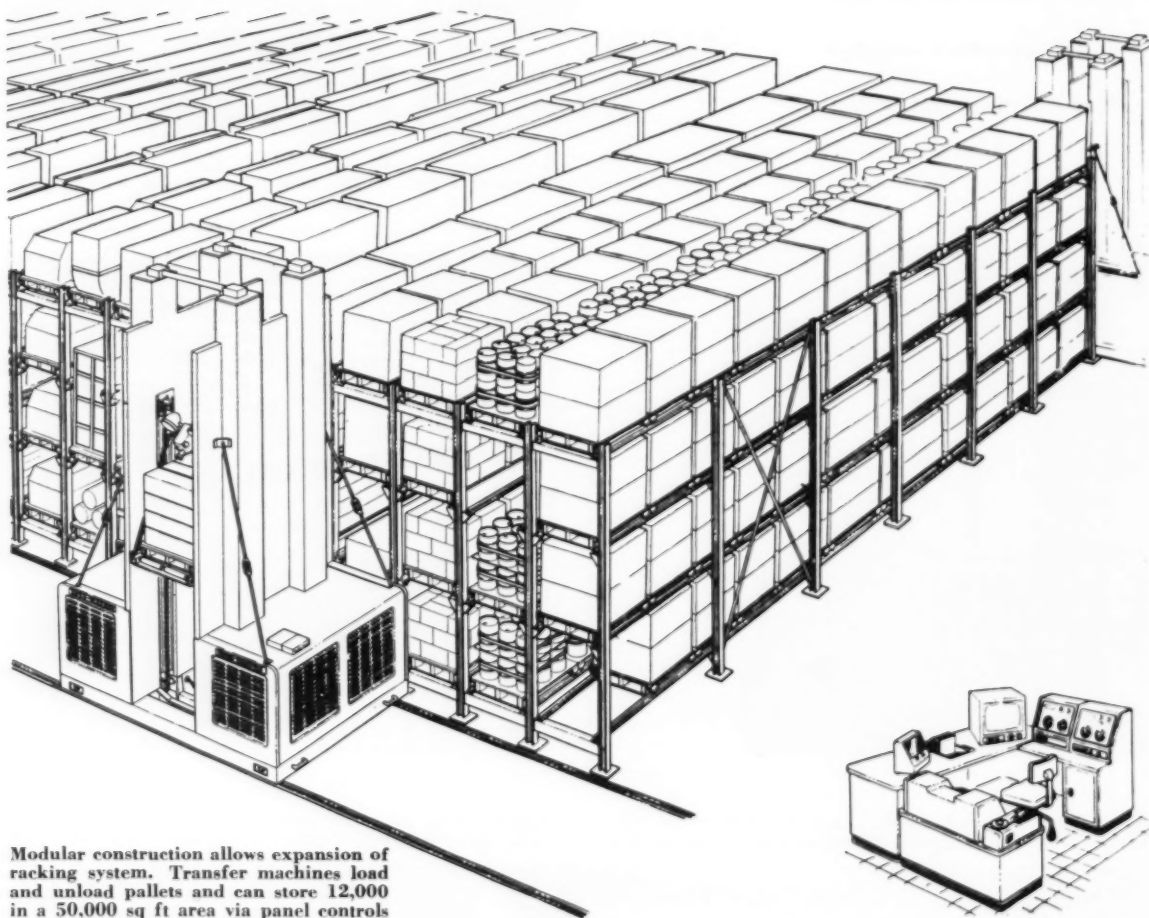


Crown Cotton loads and removes 300-lb cartons from its rack with two vertical lifts at opposite ends of lanes



## **PART 1**

# **The Automated Warehouse— Who Needs It and Why?**



Modular construction allows expansion of racking system. Transfer machines load and unload pallets and can store 12,000 in a 50,000 sq ft area via panel controls

**By D. Wayne Zimmerman,**  
*General Mgr., Automatic Warehousing  
Branch,  
Pesco Division, Borg-Warner Corp.*

This is the first of two articles on automated warehousing. The second article will take a look into the future and discuss the automatic warehouse from the standpoint of integrating storage, receiving, shipping, and manufacturing.

**P**RODUCTION'S trend toward the use of more and more automated machinery has proved it to be practical in moving parts and materials to, from, and within the machine.

For years, industry has looked forward to the day when reserve warehousing could be automated; to the day when receiving, warehousing, manufacturing, and shipping could be one automated system.

A recently introduced concept has made the automated warehouse a reality. Based on unitized reserve pallet storage, it is a practical application of full automation for reserve storage warehousing.

The automatic racking system is of modular or building block design. Modular construction provides maximum flexibility to meet a wide variety of pallet sizes and unit-load heights. It also permits

**Is the conventional warehouse obsolete? This writer sees, in the future, an industry of completely automated warehouses, operated from a control panel, without labor force**

future modifications and additions at minimum costs.

The racking system is a honey-comb of storage cells. It consists of a series of sloped rails supported at regular intervals by up-rights and cross members.

Live, roll-through storage is an essential element in the system. The palletized load is stored at one end of the rack and withdrawn at the other end. While rack depth is theoretically unlimited, practical considerations, such as rail slope, tend to limit the depth to that which will accommodate 15 pallets. This can vary with the installation.

The only aisles needed are at each end of the rack. On tracks in these two aisles the automatic pallet transfer machines operate. The pallet transfer machines are self-propelled, mobile, fork-table, elevators; one serves as a loader and the other as an unloader. Integral drive motors move them on fixed, floor-mounted tracks past the open ends of the racks. The elevator mechanism raises and lowers the pallet loads and the fork-table indexes in and out of

the unit to load or unload pallets. Each automatic pallet transfer machine can carry two pallets.

A wheeled, pallet carrier gives live, roll-through storage. Double ball-bearing support for each wheel insures minimum friction.

In a typical loading cycle, the operator first key punches the row number and cell height to identify the rack cell location in which the pallet is to be stored. Normally this is done for two pallets at a time. However, the pallets need not be routed to the same cell. The two pallet loads are automatically picked up from a receiving dock loading station by the pallet transfer machine. It then moves to the first designated cell. Acceleration is positive controlled and rapid.

As the pallet transfer machine advances, it determines the correct row by means of a photo-electric cell counting system. The number of inches of actual rack width passed is counted. By counting inches, the pallet transfer machine ignores existing building columns and uneven spacing that might throw it off.

As the pallet transfer machine approaches the designated row, it automatically decelerates and the fork-table elevator begins to move up. At the proper row, it stops and is automatically centered on the desired row.

Centering is accomplished with two hydraulically-actuated arms. These swing out to bracket with the two uprights forming the row. This arrangement compensates for lateral positioning errors up to 12 in. Since the photo-electric counter is designed to be accurate within plus or minus 1 in., absolute centering on the row is assured. Vertical positioning is by direct count and is completed ahead of the final lateral positioning.

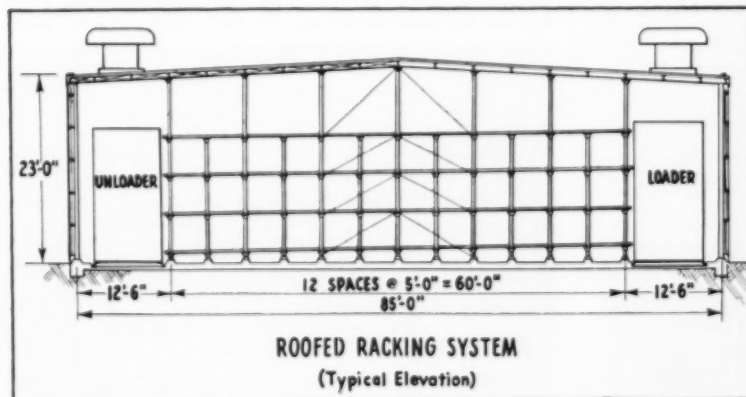
With the load centered both laterally and vertically, hydraulic cylinders raise the fork-table 1 in. to clear the elevator. The table automatically advances to load the first pallet onto the cell rails, then retracts to its neutral position.

The automatic pallet transfer machine then moves laterally to the second designated row and repeats the unloading procedure with the second pallet. The transfer machine and elevator then return to zero position to pick up the next two-pallet load.

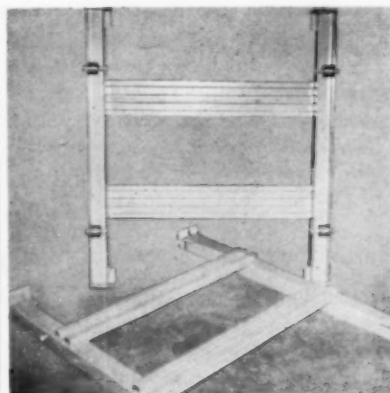
Operation of the second automatic pallet transfer machine which serves as a pallet unloader is just the opposite. An additional digit may be key-punched in this operation to deliver the selected pallet to a predetermined unloading point. The system is designed

*(Please Turn to Page 69)*

Honey-comb structure of racking system supports roof and also eliminates other non-storage areas. Pallet supports only its own load, no overpiling



Pallet carrier has wheels recessed within the channel frame for protection



# Distribution Costing . . . and the Public Warehouse



The customer wants your product only if he can get it when he wants it, where he wants it, and at the right price. Planned distribution, with the help of the public warehouseman, is an aid in this direction

By J. Leo Cooke, President, J. Leo Cooke Warehouse Corp., Jersey City, N. J.

**T**HE TRUE nature and true costs of distribution have become a subject of considerable concern in today's business world. The criticism frequently is made that distribution costs are "too high." They are "too high" only if they can be reduced without loss in quantity and quality of goods and services provided.

Many management attacks on distribution costs stem from a lack of understanding of the subject.

## What Is It?

Distribution is simply a system by which things are distributed from the factory or farm to the wholesaler, to the retailer, and to the consumer. This discussion shall focus on the mechanics of the system—the physical distribution of goods. Included are public warehousing and its relation to transportation.

The cost of distribution frequently is greater than the cost of production. It can make the difference between profit and loss. To succeed, business must exert as much effort on efficient distribution costs as on production. In the past, of course, the emphasis has been on production.

The following things make up distribution costs:

1. Direct selling expense.
2. Advertising and sales promotion.
3. Transportation.
4. Warehousing and handling.
5. Credit and collection.
6. Financial expense.
7. Miscellaneous costs such as rent, depreciation, spoilage, breakage, etc.

Most businessmen admit that we must do a better job in every field. However, when suggestions are made for improvements in the distribution process, many throw up their hands in despair. The theory

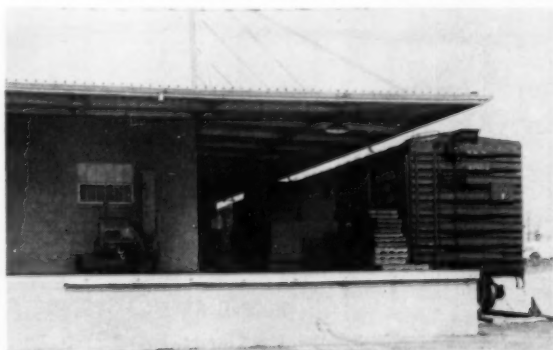
is, "distribution is costing us too much now, why pour more money into it?"

## Overall Performance

It makes little sense to condemn the overall performance and cost of distribution when the trouble may lie in only one phase. Often businessmen favor one distribution cost element over all others. To keep the overall cost picture in line, they squeeze savings out of the other elements; or they use the savings to increase the cost of their pet phase.

Management, for example, often complains that transportation and warehousing costs are too high. On the other hand, they may agree their advertising and sales promotion expenses are in line. In many cases, savings on transportation and warehousing are spent on more advertising and sales promotion, or on some other phase of distribution.

Caldwell Bonded's new one-story warehouse in Tampa, Fla., has an eight-car siding on the SAL, and 15-truck dock





Reductions in transportation or warehousing expenses cannot improve overall costs if the saving is merely passed on to another favorite element. Why, if one element is out of line, should it be made a target of another?

To properly control distribution costs, the manager should carefully analyze every item. He should know whether or not the company is spending too much for sales, advertising, insurance, warehousing, transportation, etc. He should determine whether your plants are well—or badly located.

Above all, he should be sure that any reduction in distribution costs is made without sacrifice of quality and service throughout the chain.

Distribution costs are the necessary costs of getting goods from where they are made to where they are sold. The various functions of distribution create time and place utility. The customer is interested in the product only if he can get it when he wants it, where he wants it, and at the price he wants to pay.

### The Public Warehouse

One of the most important factors in distribution—often misunderstood and unrecognized—is public warehousing.

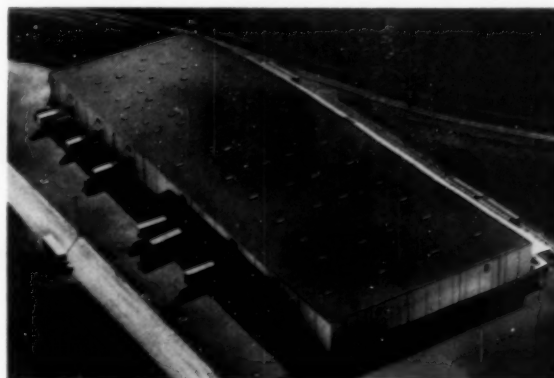
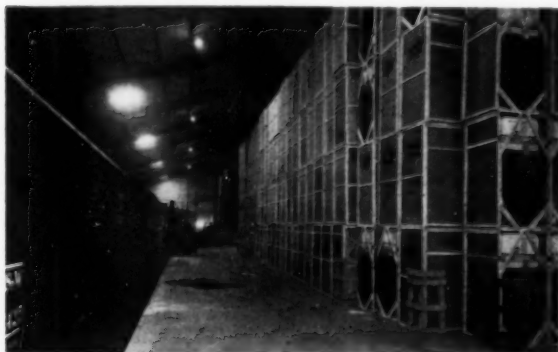
Without the almost 4000 public warehouses in this country, our distribution system could not function as efficiently as it does.

Modern warehousing no longer is a static repository, it is a live, vital service. It is an integral part of today's system of distribution. Its functions, as shown below, are essential. It:

1. Equalizes seasonal production for uniform consumption throughout the year.
2. Equalizes seasonal consumption.
3. Maintains a healthy supply and demand balance.
4. Enables storer to sell in a favorable market.
5. Lowers transportation expense.
6. Eliminates investment in buildings, and in warehouse and transportation equipment. Reduces labor, real estate and tax problems for producers and distributors.

*(Please Turn to Page 69)*

Merchandise Warehouse Co., Inc., Indianapolis, features an enclosed siding which permits all-weather unloading



Cherokee Warehouses new Choctaw unit, in Chattanooga, is one story, of pre-stressed concrete, 101,000 sq ft



Above: Buffalo Merchandise warehouses has 15,000 sq ft for loading and unloading trucks

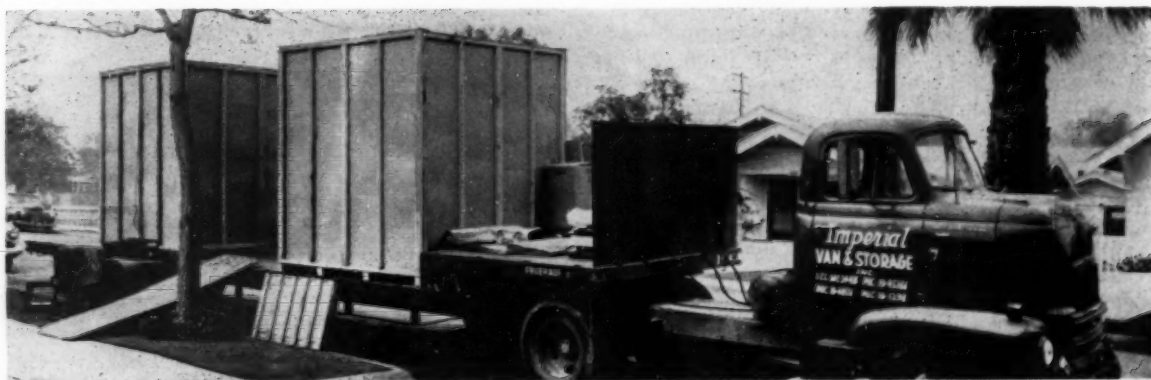
Right: King Storage Warehouse in Syracuse, N. Y., uses electric trucks, single-face pallets for handling



Below: Holman Transfer, in Portland, Ore., offers branch office space, showrooms, and pool car distribution



# **The Next Step in HHG— A Standard Container**



Future containers, like those now in use, will be loaded at the house and remain sealed till they reach destination

**T**OMORROW'S household goods warehouse and the service it will perform may be built around a type of container and the equipment needed to handle it. The container concept already is here. What prevents its complete development is lack of agreement on container size, shape, and material.

Now it appears possible that the new concept can be carried forward from a warehouse operation to a long-haul transportation operation. To be successful, this step must benefit all concerned. It should help the shipper, the long distance carrier, the household goods warehouseman, the vehicle manufacturer, the makers of warehouse and van equipment, and the materials handling industry.

Containerization provides a practical method for pickup, storage and delivery of household goods, with a single handling of separate pieces at origin and destination.

The advantages of this system are many. Goods get better protection, loss and damage are reduced, sales appeal is increased, labor costs are cut, and stowage is improved. The only new piece of equipment the warehouseman needs is a flatbed truck or trailer to haul the containers.

The next logical step is to increase the mileage of haul to long distances. Of course this step will not be taken without problems.

The first stumbling block is selection of a container. It must meet certain basic specifications. It

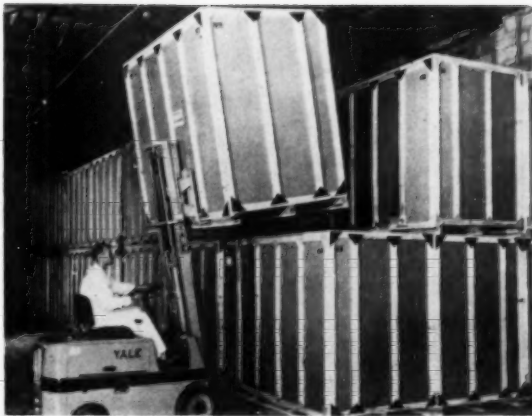
also must have some set dimensions, so it will be interchangeable. Next there must be a standard for the kind of vehicle to be used for hauling the containers.

Then there must be reasonable uniformity in materials handling equipment. Finally, there must be a plan for dividing duties and revenue between the warehouses and the line-haul carrier.

Basically, future operations will be set up like this. Certain warehouses, with buildings designed for unit containers, will be the packing and pickup agents for the line-haul carrier. The preliminary packing will, of course, be done at the home. The warehouseman will load the containers there, handle all shipper relations, and have the bill of lading accomplished for the line haul to destination. Then he will take the unit containers to his warehouse to await the line-haul carrier.

The line-haul carrier will use a large flatbed trailer. He will load the containers at the origin warehouse and transport them to the nearest destination warehouse in the system. The destination warehouse will deliver them on his own flatbed vehicle. He will unload the containers directly into the residence.

The furniture will be handled once at pickup and once at delivery. Neither handlings will be by the line-haul carrier. Any storage-in-transit, at either end of the job, will be in the containers. Every



One factor determining height of the pallet boxes is stacking height possible in most of the warehouses

The future of household goods warehousing waits the development of a container which will replace van body, protect stored goods

**By Robert F. Odell**

*President, Garden State Storage Co., Inc.  
Freehold, N. J.*

pickup date can be met, and there should be no loss of time on the delivery end. The line-haul carrier's time on the road will be greatly reduced, since he will do no loading and unloading. He will use no labor other than a driver. His vehicle will be less expensive to buy and maintain.

There are "bugs" in the system. The container itself must be waterproof, sturdy enough for long-haul transportation, light enough so that tare is not excessive, and of maximum cube. Its weight and dimensions must permit handling by a standard fork-truck, and it must be capable of stacking in the warehouses.

Two dimensions are set by the 8-ft maximum width of trucks in most states. The length of the container therefore should be 8 ft and the width 4 ft. This permits loading in either direction. The variable is height. The safe clearance height for vehicles is 12 ft 6 in. If the flatbed is 30 in. off the ground, it gives a possible 10-ft for overall container height. Every inch the flatbed height is raised reduces the container height by the same amount.

There also are problems of handling and stowing in the warehouse. With a 10-ft container, a 20-ft clearance is needed for double stacking. Few warehouses have that headroom; most have from 14 to 16-ft.

Ceiling height is not the only problem. With a 4 x 8 x 10-ft box, outside cube is 320 cu ft and



Preliminary packaging, done at the residence, will not be unpackaged until the goods reach destination

inside about 260. At 7 lb per cu ft, this gives a theoretical weight of 1820 lb. A container that size is difficult to handle. Its height is excessive for its width.

If the container is properly packed, the center of balance is 24 in. from the outside edges and 48 in. from each end. But, the very nature of household goods almost prohibits an even weight distribution.

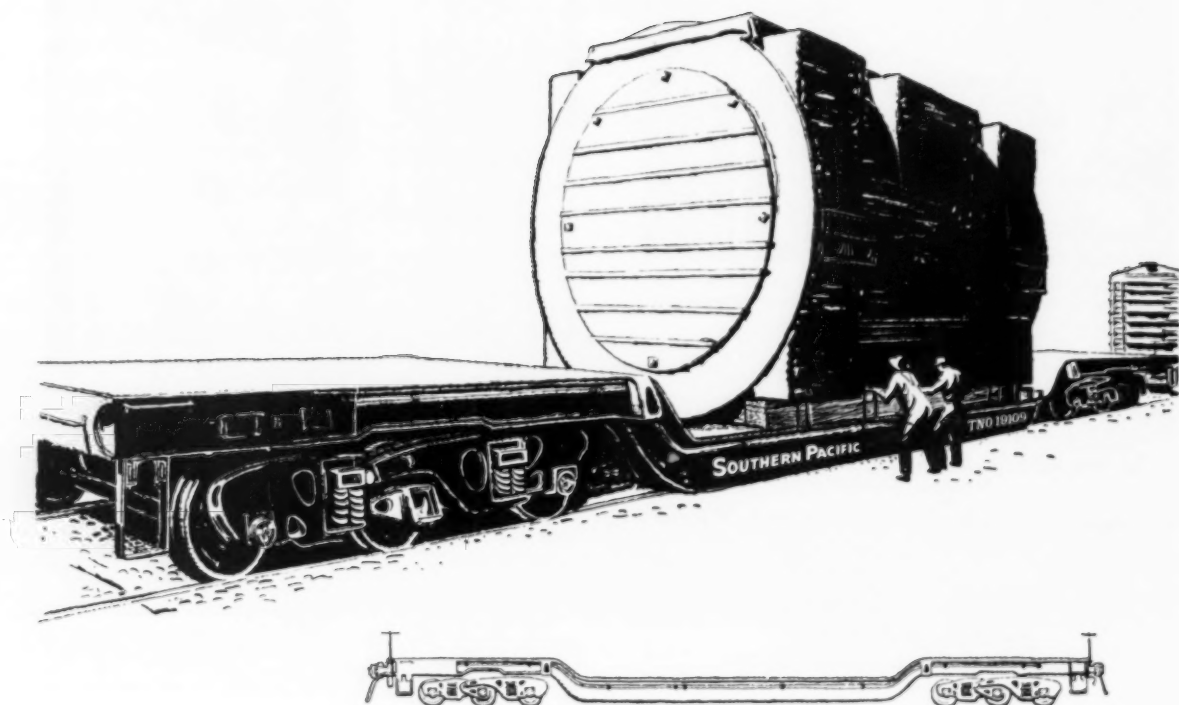
We surveyed basic characteristics for fork-lift trucks in three load capacity brackets (2000, 3000 and 4000 lb) for 10 different gasoline-powered machines in each weight capacity class and from 10 different manufacturers. It was found that, for 2000-lb capacity lift trucks, the load center for capacity lift was about 19 in. For 3000-lb capacity trucks, the average load center was 20 in., while for 4000-lb capacity trucks this figure was 21 in.

Average turning radii for these three fork-lift sizes were 65, 74, and 79 in. The aisle widths required for right angle stacking in each case were 117, 129, and 135 in. Maximum heights of lifts with high masts for the three trucks were 139, 159, and 161 in. These are average figures.

However, the averages show a general pattern in relation to the weight capacity. They show that a 2000-lb fork needs a 9-ft 9-in. aisle; 3000-lb fork requires 10-ft 9-in.; and a 4000-lb fork must have 11 ft 3 in. As to stacking height, with a high mast, you can safely figure on well over 10 ft with the average 2000-lb fork truck.

The factor to consider is not stacking height, but aisle space. It must be kept at a minimum. From this angle, the 2000-lb lift is the machine to use.

(Please Turn to Page 71)



# TALL ORDERS

HERE'S THE LOW-DOWN ON MOVING

American industry is moving more huge equipment and machinery than ever before—particularly in the 8-state Golden Empire served by Southern Pacific.

That's why we recently built 20 *depressed center* flatcars—the largest number of such cars ever built at one time by a U.S. railroad—at our freight-car assembly line in Houston, Texas.

These big weight-lifters, rolling on two 6-wheel roller-bearing trucks, carry loads up

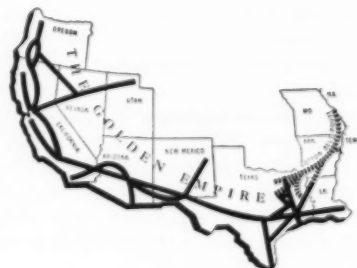
to 125 tons. Their 26 ft. x 9 ft. depressed center also makes it possible to carry extra-large loads. Massive shipments of all kinds can thus enjoy dependable, safe rail movement.

Because depressed-center flatcars are scarce, Southern Pacific is making the entire group available on a nation-wide basis through cooperation with the Association of American Railroads. Another example of how Southern Pacific provides the finest freight service—and shares it.

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Towmotor balanced weight distribution assures full traction with or without load. Positive-action hydraulic lift system guarantees instant response. Maximum free lift range is tops in industry. New standards of easy handling are established by "Pace-Maker" features like these!

Send coupon for Booklet SP-23 showing how industry's most complete line of fork lift trucks will improve your plant operations and lower your production costs.

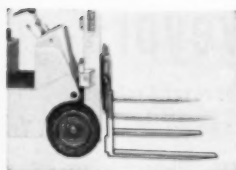
*Leaders for 39 years in building  
Fork Lift Trucks, Tractors and Carriers*



Gerlinger Carrier Co. is a subsidiary of  
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*Today's industries need Towmotor Continuous Operation*



Towmotor's Maximum Free Lift Range tops all for reachability—lets you safely utilize the "top 1/3" of valuable storage space usually wasted.



Towmotor Torque Drive offers you cushioned "creep" control unequalled in the industry today. Driving ease is more than tripled when you add Towmotor Power Steering.



New "Pace-Maker" Model 600 is typical of the easy-handling fork lift trucks in the combined Towmotor-Gerlinger line. Load capacities from 1500 to 40,000 pounds.

- ☐ Send free Towmotor Booklet SP-23
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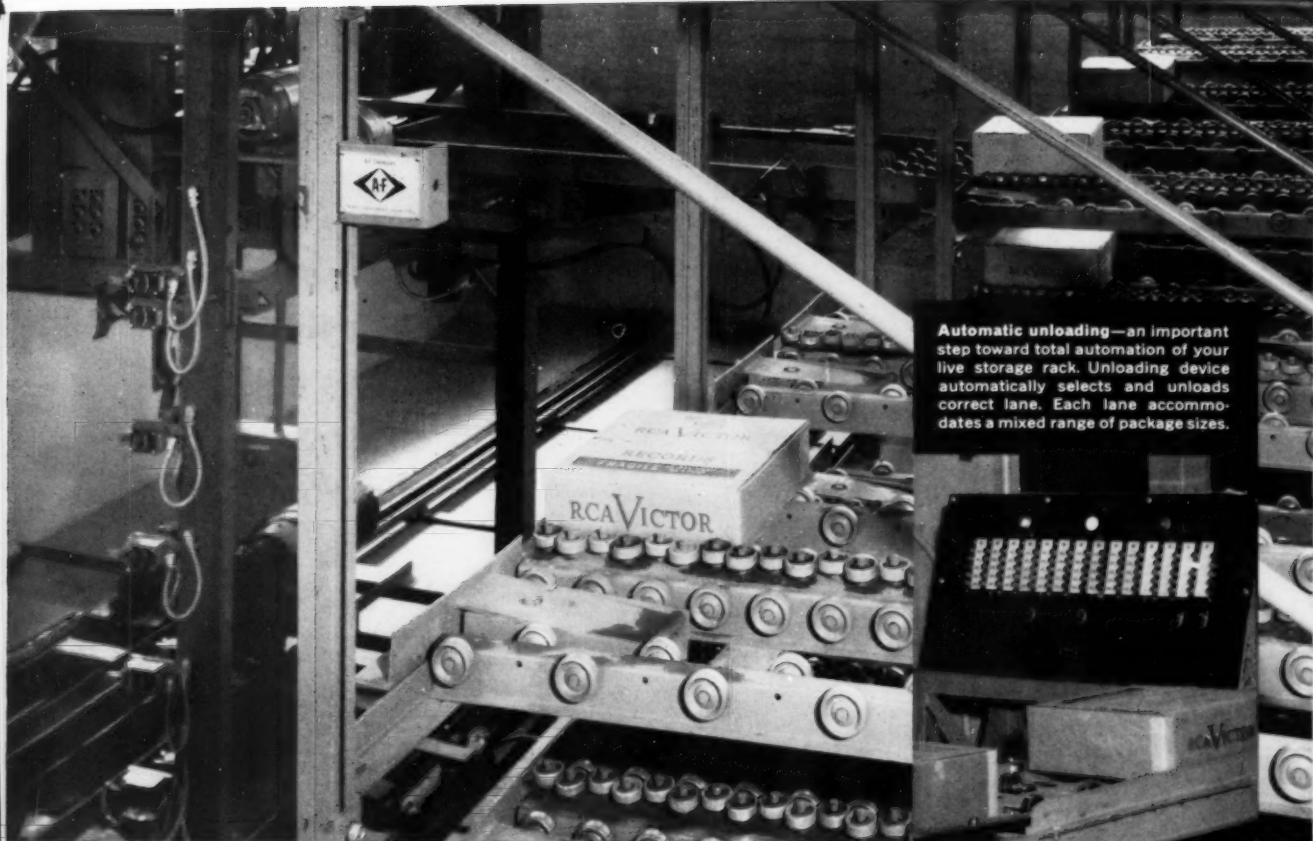
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Mail to TOWMOTOR CORPORATION, Cleveland 10, Ohio



**Automatic unloading**—an important step toward total automation of your live storage rack. Unloading device automatically selects and unloads correct lane. Each lane accommodates a mixed range of package sizes.

**Push buttons** actuate removal from storage. Same operation can be accomplished by tape or card control, if desired.

## A-F LIVE STORAGE RACKS

**Totally automatic...or "push button"...or as much automation as you can profitably use**

Your AF Live Storage Rack *can be* totally automatic—even to the point where packages actually dictate their own route and "find" their own storage—then unload themselves after a specified period of time, as needed. The rack shown is unloaded by push-button remote control. One man (or woman) removes items from storage without moving from the control console. This same operation can be actuated by tape or card control if desired.

Perhaps your plant is ready for this kind of automation—or perhaps it's still a few years away. The important point is that when you invest in your live storage rack, you have purchased the basic element for your future automatic warehouse. It will give you great benefits today—whether loaded and un-

loaded by hand, by lift truck, or by other mechanical devices. Then, at a later date, it can be converted—simply by adding automatic loading and/or unloading devices.

Whatever degree of automation you specify, the fundamental advantages of live storage will be yours from the outset—orderly storage, elimination of needless walking and confusion, fool-proof first-in first-out control, space saving and many other benefits.

Our engineers will gladly survey your present storage facilities, make suggestions on cost-saving improvements and submit a proposal. In addition, we will help you determine just how automatic your system should be—for maximum benefit to you today and tomorrow. Write today for complete details.



*A-F founded the package conveyor business in 1901*

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Custom Engineered Conveyor Systems  
Packaged Conveyors—Wheel, Roller, Belt, Trol  
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**A perfect shuffle...**

**a cut in terminal time...**

**a "*Grande*" deal...**

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**Grand Junction  
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TRAFFIC OFFICES  
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You're the winner every time! Rio Grande's fast shuffle at its new multi-million dollar Grand Junction classification yard eliminates costly terminal time on shipments through its gateways at Denver and Pueblo, Colorado, and at Salt Lake City and Ogden, Utah.

The Grand Junction yard is equipped with every time-saving device known to modern railroading—automatic retarders mean quick, careful spotting... a talk-back paging system augmented by a radio communication system links every section with the control tower for fastest transmittal of orders and information... giant flood-lamps permit round-the-clock operation—the facilities here are typical of Rio Grande's entire transportation plant—a heavy-duty high-speed steel highway system operated solely to give you dependable transportation service.

## **DENVER & RIO GRANDE WESTERN RAILROAD**

***The Direct Central Transcontinental Route***

R. K. BRADFORD, VICE PRESIDENT-TRAFFIC

RIO GRANDE BUILDING, DENVER 17, COLORADO

AUGUST 1958

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# Allis-Chalmers Trucks with **TRI-LIFT Masts**

## STACK NEARLY $\frac{1}{2}$ HIGHER

## YET WORK IN LOW HEADROOM

Allis-Chalmers 4,000-lb fork truck with Tri-Lift mast enters a low-headroom truck at the loading dock.



Here the same truck reaches high for efficient yard stacking, with its Tri-Lift 144-in. mast.

**STORES MORE MATERIAL** — Wherever there's room above for stacking, an Allis-Chalmers Tri-Lift truck gives you up to 50 percent extra storage space at your "fork tips." No penalty when you work around low overhead obstructions, either.

**OPERATES IN ENCLOSED TRAILERS AND BOX-CARS** — In addition to reaching up nearly one-half higher, an Allis-Chalmers Tri-Lift mast, when lowered, ducks through low doorways or into enclosed trailers and boxcars.

**IT'S SIMPLE, WITH GOOD VISIBILITY** — Uses

only a single, standard lift cylinder — like any conventional mast. No complicated ratchets or latches. This simplicity means more visibility through the mast.

**FIND OUT MORE** — Call your Allis-Chalmers material handling dealer. He'll be glad to demonstrate the advantages of Tri-Lift mast. He'll help you select the "years-ahead" model and capacity truck that will best suit your particular needs. You may have detailed literature by writing direct. Allis-Chalmers, Milwaukee 1, Wisconsin.

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## Automated . . .

(Continued from Page 59)

to operate on a two-minute cycle for either loading or unloading. Hence, the automatic warehouse production capacity is rated at 30 pallets in and 30 out per hour.

To permit mixed product storage, the racking system may be provided with return rails. With this arrangement, it is possible to pick not only the row number and cell height, but pallet number as well. When a signal to pick other than the end pallet is received, the unloader moves to the designated row and cell height. First it transfers to the return rails all pallets ahead of the one specified. The desired pallet then is picked and unloaded in the manner previously described.

The operator can send either of the pallet transfer machines to any location and have it load or unload thus allowing complete freedom of operation.

The advantages which may be achieved by a fully automated reserve storage warehouse are:

1. Less total floor space per pallet.
2. Improved warehouse efficiency.
3. Reduced stock spoilage.
4. Less stock damage.
5. Lower equipment and maintenance costs.
6. Reduced manpower requirements.
7. Less area lost for personnel facilities.

Major economy achieved with this system is the conservation of space. Space for aisles, lunch areas, toilets and heating equipment are minimized or eliminated entirely. Automation permits the maximum cube utilization.

Using a racking system four cells high that handles a 4 x 4 ft pallet with a load 4 ft high, a fully automatic 50,000 sq ft installation can accommodate 12,000 pallets. This compares with 6,000 pallets that can be stored at one time in a 50,000 sq ft warehouse using conventional pallet racks.

Efficiency is improved through the automatic scheduling of loading and unloading operations.

(Please Turn Page)



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like having \*an invisible helper  
on every delivery you make!**



For ½ ton and larger trucks and semi trailers: choose from 4 Lift Gate models to accommodate loads 1000 to 4000 lbs.



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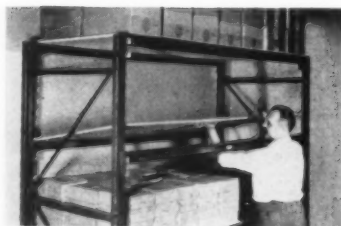
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# New STURDI-DECK

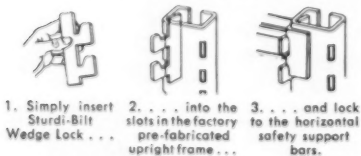
*low-cost decking for bulk storage*

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Frame members take standard plywood sizes or dunnage—no notching, drilling or bolting required.

Float wedge construction eliminates nuts, bolts, tools, welding or special labor.



New Sturdi-Deck combines the convenience of wide, open shelf area with the economy of prefabricated frames that use standard plywood sizes or dunnage for shelf base. In addition, Sturdi-Deck offers the advantages of adjustability. It can be quickly and easily adjusted to meet changing needs—requires no tools or skill, fits together neatly from standard frame components.

Sturdi-Deck can also be used in combination with pallets to further extend its usefulness. Available in 2, 3 and 4 foot depths; 6, 7 and 8 foot lengths; 6, 7 and 8 foot heights. Want more details? Send the coupon below.

For more information on new Sturdi-Deck, attach this coupon to your letterhead, or write:



STURDI-BILT  
Material Handling Division  
Union Asbestos and Rubber Company  
332 So. Michigan Ave., Chicago 4, Illinois

DA-88

## Automated . . .

(Continued from Preceding Page)

Since the automatic pallet transfer machines are not subject to fatigue, their designed capacity of 30 pallets in and 30 pallets out per hour is maintained consistently on a 24-hour schedule if desired, without premium wage penalty.

Stock spoilage is an important consideration in most warehousing operations. "Spoilage" means not only rot or decomposition but also such factors as structural weakening, aging, obsolescence or other effects caused by too much time on the shelf. The roll-through live-storage feature makes "first-in, first-out" automatic. Where manufactured products include purchased components which have a warranty period, this principle becomes increasingly important.

Some stock damage is normally expected in a conventional warehouse system as a result of overpiling or spillage. In the automatic system, each pallet supports only its own load; the danger of overpiling is completely eliminated. Spillage will not be eliminated but consistent automatic handling makes it unlikely.

An integral building for housing the automatic system can be constructed where a new warehousing operation is being set up. The roof supports of such a warehouse are an integral part of the racking system.

The fully automatic reserve storage warehouse produces distinct advantages in terms of maximum utilization of the cube, improved warehousing efficiency, and reduced spoilage and damage. Automation is a logical direction for the warehousing industry's next big step—old warehouses are inefficient and just aren't up to the pace of today's manufacturing and merchandising operations.

This automatic system is beyond the dream stage. It is a reality. When used in conjunction with a stringent inventory control system, it points the way toward a truly modern warehousing system. •

(Resume Reading on Page 60)

## ... Container

(Continued from Page 63)

However, the average capacity load center is under the 24-in. characteristic of a container 4-ft wide. Use of the average of 19 in. cuts 5 in. off the center of the load. This automatically reduces the capacity of the 2000-lb fork by about 22½ per cent and results in a lifting capacity of 1550 lb.

The weight capacity of a 4 x 8 x 10 ft container at 7 lb per cu ft is 1820 lb. Add to this an approximate weight of container of 400 lb and the weight is too heavy for a 2000-lb lift. Also the height, when double stacked, is greater than the usual warehouse stacking height. For most warehouses, the height should be 7-8 ft. That, however, loses 2-3 ft of possible height for flatbed trailer use.

There must be compromises made all along the line. A unit container 4 x 8 x 8 ft will have an outside cube of 256 cu ft, and inside cube of about 210. One 4 x 8 x 7 ft will have 244 cu ft outside and about 190 cu ft inside. Their theoretical capacities will be 1470 and 1330 lb, respectively.

The containers probably will weigh 300 and 350 lb. Added to the rated weight capacity of the box, this produces a weight closer to lifting capacity of a 2000-lb fork truck. These containers are also within the usable height for stacking.

### Containers and Trailers

The container itself sets some of the standards. It must be waterproof. Steel may be too heavy. And aluminum may be too costly. A very thin aluminum sheet bonded to plywood is a possibility. Plastic also can be considered. If just plywood is used, perhaps a waterproof cover can be devised to protect each container. If individual covers are used, the line-haul vehicle will have to carry enough to protect the unit loads. There are all sorts of weather conditions to contend with, and the containers must be built to survive them all. The units also must have some means of identification; a load of

(Please Turn Page)



## Ready-Power LPG-Electric Power Unit for Sit-Down Trucks

### MODEL HA-3 FOR 4000-6000 LB. FORK TRUCKS

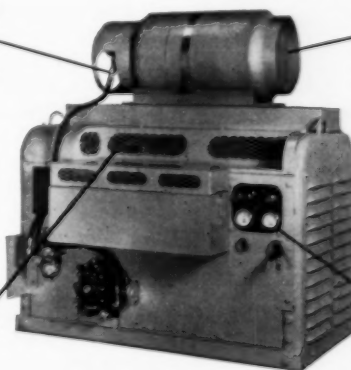
Now, get the advantages of full-time LPG-electric power for any electric, sit-down fork truck, regardless of make or model. Compact Ready-Power model HA-3 accommodates all seating arrangements . . . assures remarkably low-cost operation . . . minimizes objectionable fume problems. Compact LP-Gas cylinder is mounted on top of engine-generator housing for quick, easy interchangeability. Hinged cover and side plate give easy access to engine accessories; removable end plate permits service of generator. LP-Gas components are listed by Underwriters' Laboratories and comply with Factory Mutual recommendations. Write today for full information.

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LP-Gas cylinder is standard I.C.C. 33½-lb. or 43½-lb. capacity. A.S.M.E. tank is optional.

Recessed housing accommodates seating arrangement for all electric sit-down fork trucks.

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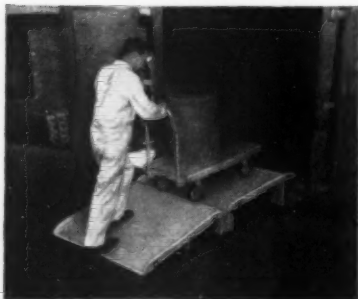


## READY-POWER

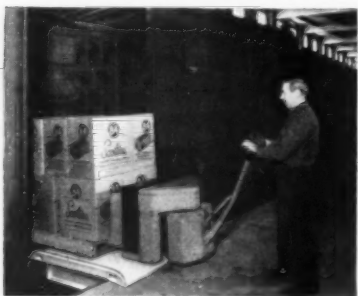
The READY-POWER Co., 3821 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks  
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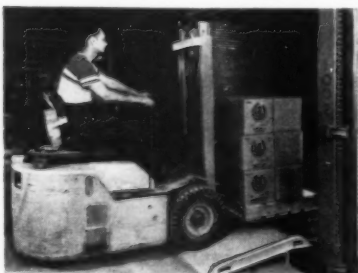
# Magcoa Lite-Weight Dockboards



The perfect solution when trucks are much higher than your dock is a Ramp-Dockboard combination. For full flexibility, the Dockboard section can be used separately on lower trucks. One combination solves several dock problems.



To solve the problem of varying widths and heights of railcars, Magcoa Rail Dockboards are individually fabricated for your specific dock conditions . . . are guaranteed to fit your needs exactly! Truck loading or rail . . . there's a Magcoa method to cut your costs.



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## ... Container

(Continued from Preceding Page)

them on a trailer will constitute a rolling billboard, like vans do today.

The problem of outsize pieces of furniture also arises. Some articles will not fit in the standard size containers. How will they be handled? Another problem will be overflow items. It is going to be difficult to load six containers and then find that there is an extra bedspring?

What kind of a flatbed trailer should be used? With a drop frame container height can be increased, but some of the capacity is lost over the fifth wheel. Also, with a drop frame as low as a van, a choice must be made between wheel pockets and very small trailer wheels. Wheels can be so small that speed is curtailed. At about 41 in. off the ground the bed will be level, except for the step, with 750 wheels.

To keep the bed level for its entire length it must be from 48 to 54 in. off the ground. A flatbed which is level for its entire length may be better for the line-haul vehicle, since the driver will not handle the freight. For the origin and destination warehouse, a drop frame may be much better. Of course the bed should be as near the ground as possible.

### Who Will Set Standards?

One warehouse cannot set the standards because individual standards and requirements will not hold for an industry. It must be one of the large organizations, like the NFWA, who already has initiated investigation and study of palletized practices. Whatever group it is, it must work in conjunction with the long distance carrier organization.

Perhaps to begin with, it would be best to operate the long-haul container system between certain set points. There could be north-south or east-west runs, with relatively few terminals. This would give much better control of the operation and show how to control the flow of containers.

Next is the question of who will

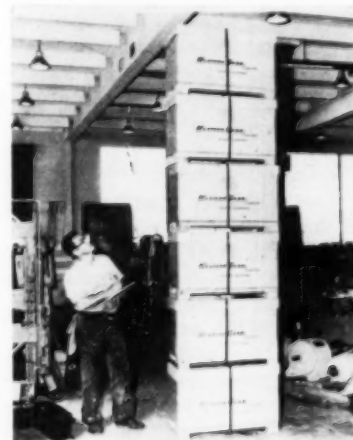
build, and who will own the containers. For building, it might be the trailer or box manufacturers. As to ownership, should it be the warehouse, the line-haul carrier, or a joint ownership? Perhaps some separate company should be set up to control the purchase, maintenance, and distribution.

### Revenue Problem

There certainly will have to be radical changes in operations and distribution of revenue procedures. The warehouseman will become much more important in long distance moving. The line haul carrier will function as an express line on regular runs between set points.

The total responsibility still will be a three-way deal between the origin warehouse, the line-haul carrier, and the destination warehouse. Any of the three could break down the whole system. For this reason there must be a single control. It probably should rest with the line-haul carrier. •

### Heavy Duty Corrugated Boxes



Western Gear Corp., Belmont, Calif., has reduced packaging costs by adopting a corrugated box for shipping gear motors. Corner posts are stitched into each corner of the box and then placed on a wooden skid. The gear motor is lowered into the box and is fastened to the wood skid with lag screws. A corrugated lid is placed in position and the package secured with a band of steel strapping.

DISTRIBUTION AGE



## Literature from the Advertisements

Listed below are brief descriptions of catalogs, brochures, booklets and other literature offered by advertisers in this issue of DISTRIBUTION AGE. To get your copies of the items offered, simply circle the appropriate number on the Reader Service Card, facing Page 49.

### Before You Move

Planning personnel shifts? Allied Van offers a booklet filled with valuable tips. Circle No. 25.

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Allis-Chalmers' triple-mast fork truck permits 144-in. stacking, yet works in low headroom. Circle No. 10.

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American Metal Products' Slide-n-Lock racks permit over 800 sizes and capacities from five basic parts. Circle No. 6.

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If your heavy deliveries require "kid glove" handling, get Anthony's new brochure on powered lift gates. Circle No. 11.

### Sky-Hy-Lift

Automatic Transportation's new Sky-Hy-Lift has 144-in. lifting height, 68-in. collapsed mast height. Circle No. 18.

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Need a new warehouse, terminal, distribution depot? Investigate Butler's steel-frame structures. Circle No. 3.

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A new Chesapeake and Ohio booklet describes the railroad's Car Location Information Center for keeping tabs on shipments. Circle No. 26.

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Consolidated's non-stop service between the West and Midwest is called Daysaver. Transi-Timer schedules available. Circle No. 27.

### Distribution and Warehousing

J. Leo Cooke Warehouse offers individual solutions to transportation, warehousing, and other distribution problems. Circle No. 28.

### Mechanical Cargo Control

General Logistics claims it can cut damage on all commodities, from baked goods to satellite tracking cameras. Circle No. 17.

### Longer Industrial Tire Life

If you're spending too much on tire replacement, take advantage of B. F. Goodrich's free tire and wheel analysis. Circle No. 5.

### The Human Side of Moving

Greyvan Lines offer tm's and other executives tips in personnel and industry moves in "The Human Side of Moving." Circle No. 29.

### Dock Problems and Solutions

Dock loading problems and their solutions are discussed in a new booklet by Magline. Circle No. 15.

### Light-Weight Dockboards

Versatile new ramp-dockboards and a variety of standard rail and truck dockboards are discussed in new literature by Magnesium Co. of America. Circle No. 14.

### Plant Site Selection

If you're looking for a new main or branch plant location, get Northern Pacific's site selection data. Circle No. 30.

### Compartmentized Cars

Pullman - Standard's compartmentizer equipped boxcars offer claims-free shipping with less expense and effort. Circle No. 2.

### One-Man Gang Handling

Towmotor's Pace-Maker fork trucks, with maximum free lift, are described in Booklet SP-23. Circle No. 8.

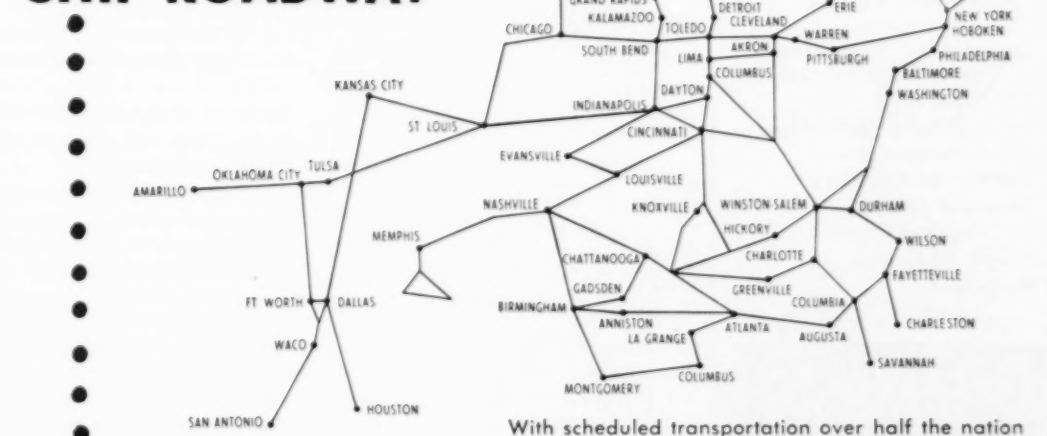
### Move it via the Mississippi

Bulletin 1801 by Union Barge Line tells the shipper how he can save money by inland waterway transport. Circle No. 31.

### Air Freight for Speed, Savings

The United Air Lines Air Freight Booklet gives time and cost saving tips on air freight shipping. Circle No. 32.

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Here's the ideal place for storage and distribution... ideal in climate and humidity as well as location... central to all the West and right in the heart of a seven-county \$6,000,000,000 annual income market!

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## Minimum...

(Continued from Page 35)

the panes. If the warehouse is used at night, unshaded windows create excessive contrast because they appear black next to the illuminated walls. Blinds, shades, or painted panes also reduce this contrast.

Wherever bright surfaces of materials, tools, or equipment reflect mirror-like images of the light source, reflected glare is a problem. This situation can be improved by:

1. Reducing the brightness of lighting equipment in the reflected glare zone, which is vertical to 45 deg. (This is the part of the fixture which usually is reflected by a horizontal work surface.)

2. Locating the light, the worker, and the equipment in such a way that the reflections are directed away from the worker's eyes.

3. Using fixtures with a suitable upward light. This does not eliminate reflected glare, but it minimizes the glare because there is less difference in brightness between the ceiling and the fixture.

Sharp shadows are distracting. They also can be dangerous. Slight shadows sometimes are helpful in perceiving depth, but they never should be sharp or harsh.

Shadows can be minimized by selecting a fixture with a wide-spread distribution of light. Fluorescent lighting, because of its elongated light source, tends to eliminate sharp shadows. Shadows are further reduced by using fixtures which direct a suitable amount of light up onto the ceiling.

If there is too much contrast in the brightness of various parts of the room the lighting can be uncomfortable. Maximum brightness ratios recommended are:

1. Between task and nearby surroundings, 5 to 1.
2. Between task and more remote surfaces, 20 to 1.
3. Between fixtures, windows, or skylights and surfaces next to them, 40 to 1.
4. Anywhere within worker's vision, 80 to 1.

A high contrast is desirable on the task itself—the object an employee is looking at or working on.

For example, it is easier to read a gage with black marking on a white background than it would be to read one with gray markings against a metallic background. Away from the task, however, ratios higher than those shown above can cause discomfort and fatigue.

Brightness of a surface is the product of the illumination falling on it and its reflectance. Brightness ratios, then, are affected by the reflectance values of the finishes on room surfaces and equipment. Light absorbed by dark walls and ceilings is wasted light. Generally, the ceiling should be painted white, and the walls and equipment in light colors.

Spread type fixtures which illuminate the side walls help create a pleasant balance in brightness. If the fixtures have an upward light component of 10 to 30 per cent or more, brighter ceilings will further reduce the contrast between fixtures and ceiling.

### Uniformity and Color

Uniform illumination provides several benefits:

1. The brightness ratio is more comfortable.
2. All parts of the warehouse can be used with equal efficiency.

3. Flow lines can be relocated with little change in lighting plan.

Color characteristics of the various types of light sources also can be an important consideration in planning a system.

Incandescent is warm and flattering to most colors. It is acceptable to almost everybody. Mercury lighting is psychologically cool. It can be used to advantage in warehouse areas where temperatures are high and color discrimination is not important. If a more natural light is required, color-improved mercury lamps can be used or standard mercury lamps can be combined with incandescent lamps.

Fluorescent lamps are available in a wide range of colors. Fluorescent can be selected to fit almost any location or any type of task.

More is said about selection of light source and fixtures in Part III of this series, beginning on Page 36. •

(Resume Reading on Page 36)

## Proper Source and . . .

(Continued from Page 37)

Fixtures used in one of these locations should have a dust-tight rating for that type of hazard. In addition, often it is desirable to select dust-tight equipment to keep the lamp and reflector clean whenever there is considerable non-combustible dust and grime.

Vapor-tight equipment is recommended for warehouses in which the air contains corrosive fumes, moisture, or vapors that are non-combustible. This type of equipment is available for both incandescent and fluorescent lamps.

### Type of Reflector

Reflecting surfaces used in warehouse lighting equipment are listed in the accompanying table. The fixtures must be ruggedly built to withstand the rigors of installation, operation, and maintenance.

If machinery transmits vibration or shock to incandescent units, they sometimes should be mounted on shock-absorbing sockets. Vibration has little effect upon fluorescent lamps, but if they are likely to be jarred from their sockets compression-type lamp holders or other safety devices should be used.

### General Suggestions

Fluorescent fixtures, because of their widespread light distribution, can be used to advantage in low-ceilinged and certain large high-ceilinged areas. They provide uniformity of illumination, good vertical lighting on work surfaces and on sides of machinery, reduction of shadows, and low source brightness.

These fixtures usually have two or three lamps. Two-lamp units are preferable because they are more efficient, less bright, and will be spaced more closely. This softens shadows and makes illumination more uniform. Fixtures for 90-watt lamps should not be mounted less than 12 ft above the floor.

Fixtures without baffles or louvers provide a crosswise shielding angle of 13 deg below the hori-

zontal. In the two-lamp unit, a center baffle can be provided to increase crosswise shielding to 27 deg. This results in very little loss in the overall utilization of light. Shielding of 25 deg crosswise and 35 deg lengthwise is provided in some of the newer, up-light fluorescent units.

Egg-crate louvers can be used with either two-lamp or three-lamp units to provide both crosswise and lengthwise shielding at angles varying from 25 to 45 deg below horizontal.

Because of the high brightness of the new higher output fluorescent lamps, it is important that proper study be given to working conditions and fixtures to insure an acceptable minimum of direct and reflected glare.

Industrial fluorescent fixtures also can be classified according to percentage of upward light.

Incandescent lighting units for low-bay areas have porcelain enamel or prismatic reflectors to give the necessary widespread distribution. A typical low-bay fixture is the familiar dome reflector. It has a light distribution symmetrical about the center axis.

If it is impossible or undesirable to mount fixtures on the ceiling, angle reflectors can be mounted on side walls and columns.

In high-bay areas, fixtures for mercury or incandescent lamps with a fairly widespread distribution often are chosen because they have good diffusion, vertical illumination, and uniformity. They also cast minimum shadow. Reflectors may be of porcelain enamel, aluminum, or prismatic glass. If it is more important to provide maximum footcandles on the working plane than it is to obtain vertical illumination and decrease shadows, aluminum or glass reflectors of a more concentrating type can be used.

More tips on better lighting, including lighting standards and a "better lighting check list" are presented in Part IV of this series (Page 38). •

(Resume Reading on Page 38)



**For shipping chairs**



**or pears**



**or aluminum wares**

### The better way is Santa Fe

ONE railroad all the way between Chicago, California and Texas! Call the nearest Santa Fe Traffic Office and have the longest railroad in the United States go to work for you.



# Setting Standards...

(Continued from Page 39)

With these factors known, the obvious misfits can be eliminated and the choice narrowed to a few which can then be subjected to the test of economy. In all interior areas, some amount of lighting must be provided for the ceiling.

Of primary importance to the actual operation of the warehouse is the exterior lighting on the truck loading, and unloading, dock. One important area often overlooked in considering lighting is the truck itself. Unless provision is made for reel lights or portable safety lamps, the interior of the trucks may be totally dark.

In addition to the dock areas, lighting must be provided for driveways, parking areas, walkways, and building entrances. The footcandle level in these areas is nominal. However, when contrasted against the darkness of night these levels are adequate. Another exterior lighting possibility is floodlighting the building

front and company sign to provide roadside advertising.

## Within the Warehouse

Within the warehouse, the shipping and/or receiving area and the packing and packaging area are particularly important. In addition to the physical handling of goods, these areas usually involve a certain amount of checking of material against paperwork (orders). For these tasks, at least 20 to 40 footcandles are required.

Heart of the warehouse operation is the storage area. In analyzing the basic characteristics of modern distribution systems, two storage methods appear prevalent—so-called drag-line and live. The distinction must be drawn because the two systems require separate solutions.

In the drag-line (in-floor or overhead truck drag) system the entire storage area is set up with racks or piles separated by aisles.

A pickup vehicle tours the entire area. A general level of illumination of 20 to 40 footcandles must be provided over the entire storage area. If aisles are defined, lighting fixtures should be located to give maximum coverage of the aisles.

When a live storage system is used, the area is divided into three distinct parts; bulk storage, active stock, and the picking operation. The bulk storage area usually contains pallet loads of full case lots of a particular item. Since this area is relatively inactive, only 10 to 20 footcandles are needed.

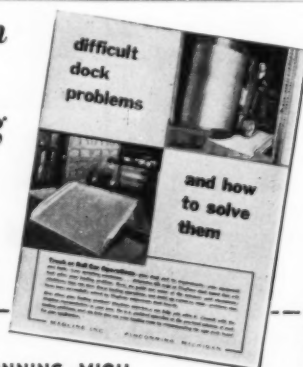
## Goods Transferred

Goods withdrawn from bulk storage are transferred to active storage. In this area storage is either on racks or in bins. If bins are used maximum lighting is obtained by mounting fixtures between the bins in a manner similar to library stack lighting. Whether bins or racks are used, the area is in constant use and requires 20 to 40 footcandles.

Maximum light intensity is re-

## New Bulletin points out dock loading problems...

shows how to solve them!



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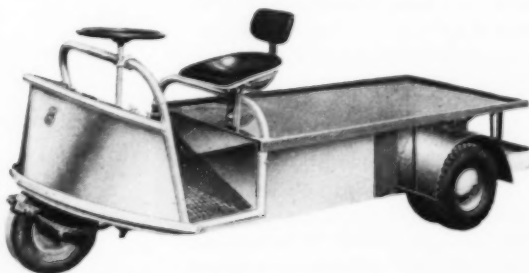
Now! Take advantage of the experience of others in solving your dock loading problems! New, illustrated bulletin points out many of the common, and uncommon conditions that slow down dock-loading operations—truck or rail—and build up excessive costs. On-the-job photographs show how typical problems have been successfully and economically solved—narrow car doors, reefer cars, restricted dock space, ground level loading, etc. Send for your copy today!

Canadian Factory: Magline of Canada, Ltd., Renfrew, Ont.

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## ALL-PURPOSE LAHER ELECTRIC TRUCKS... FOR HUNDREDS OF INDUSTRIAL USES



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Rugged Laher electrics are available in 20 different models to fit every industrial use—they have speeds as required up to 18 mph, and can be operated from either standing or sitting positions.

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Laher electrics have a normal life expectancy of 20 years, yet operate for only about 10¢ per day — or one-fifth the operating costs of comparable gas driven equipment.

Address all inquiries to Laher Spring and Tire Corporation, 2615 Magnolia St., Oakland, Calif., or 300 Madison Ave., Memphis, Tenn.

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quired in the "picking" operation since units or parts are handled rather than complete cases. Relatively high level lighting of 40 to 60 footcandles is required.

The new concept of warehouse operation has produced an increase in the amount of administrative work. Order servicing, record keeping, inventory evaluation, and other functions normally performed in home office buildings have been moved into the distribution center. Clerical tasks such as these require levels of 50 to 70 footcandles.

#### Check List

Quantity of light alone is not sufficient to guarantee a satisfactory lighting. The National Lighting Bureau of the National Electrical Manufacturers Association has drawn up as part of their Certified Lighting program a "Plus Features Checklist." The list serves to summarize the factors of good lighting.

1. Are higher footcandles than minimum standards provided?
2. Are arrangements provided for special seeing tasks, including local lighting?
3. Provisions for Visual Comfort.
  - a. Brightness Control:
    - Are lamps concealed from view at low angles?
    - Are fixture brightnesses of low level?
  - b. Does fixture provide an upward indirect component of light?
  - c. Does fixture provide special diffusion to reduce glaring reflections from the work?
  - d. Do colors used on machines and room surfaces provide low contrast brightness ratios?
4. Is illumination provided on vertical surfaces?
5. Wiring:
  - a. Is wiring adequate for possible greater future requirements?
  - b. Is switching flexible with reference to departmental night work (local and at exit)?
6. Does the lighting of stairways meet the need for traffic and safety requirements?

7. Is suitable lighting provided for hazardous areas, perhaps vapor-proof equipment?

8. Is spacing adjusted to avoid shadows due to tall equipment?

9. Is a special color provided where needed?

10. Are auxiliary areas such as yards, loading docks, etc., properly lighted?

11. Does the lighting in rest rooms promote and suggest cleanliness?

12. Is provision made for night lighting, as an aid to watchmen?

13. Is emergency lighting provided on an independent circuit?

14. Is adequate incandescent lighting provided in mercury vapor installations?

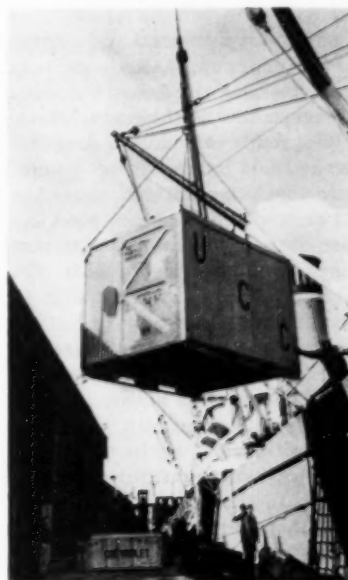
15. Is the location marked by identifying exterior illumination, floodlighting, or sign?

16. Is protective lighting provided?

17. Is equipment selected well suited for cleaning, relamping, possible repairs (replacement of ballasts)? •

(Resume Reading on Page 40)

#### Container Export Service



United Cargo Corp. has started a regular service of cargo van shipments from New York to South Africa. Using American Car and Foundry containers, United is shipping van loads of hi-fi products via States Marine Lines, Farrell Lines, and Robin Lines



## TURN LOSSES INTO PROFITS!

COOKE *personalized* service cuts your costs, raises your profits through *individual* solutions to your particular warehousing, transportation and physical distribution problems. 30 years a leader in public merchandise warehousing in the world's greatest distribution center! Unsurpassed in specially-trained personnel, methods, equipment and facilities! Write *today* for detailed brochure.

*when time and money count, count on*



### J. LEO COOKE WAREHOUSE CORP.

JERSEY CITY & TRENTON, N. J.

PENN RR: 140 Bay St. Jersey City 2  
Oldfield 3-5080 • Whitehall 3-5090  
Whitehead Rd., Trenton 9 • Juniper 7-4646  
ERIE RR: 12th & Provost St., Jersey City 2  
Oldfield 3-5080 • Whitehall 3-5090

TWX: JC-112



EASTERN REPRESENTATIVES FOR:  
North Pier Terminal, Chicago, Ill.  
Encinal Terminals, Alameda, Calif.



**SWITCH  
FROM  
"SAVING"  
TO  
MAKING  
MONEY!**



## **LEASE..... for Profit**

You can't afford to spend capital or waste top executive time on an unprofitable department.

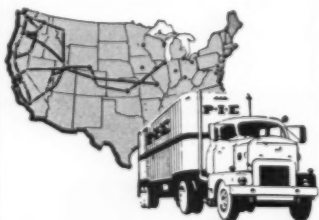
You tie up two valuable assets when you own your trucks—capital and executives. Why waste them on a non-profit operation?

A NATIONAL truckleasing expert can put them both back to work for you, making profits.

WRITE for details—and the name of your local NATIONAL member.

**National TRUCK LEASING SYSTEM**  
23 E. JACKSON BLVD., SUITE A-8, CHICAGO 4, ILL.

**Shippers  
Agree...  
It's P-I-E!**



**P-I-E**

PACIFIC INTERMOUNTAIN EXPRESS

TERMINALS AND OFFICES  
IN PRINCIPAL CITIES

GENERAL OFFICES: P-I-E BUILDING  
14th AND CLAY STREETS  
P. O. BOX 958 OAKLAND 4, CALIF.

## **Maintenance Standards...**

(Continued from Page 41)

social conversation with the on-lookers, returns the ladder to the stockroom, then goes back to the job he had been working on.

The average time for this replacement is about 20 minutes. At a labor rate of \$3 per hour, this 20-minute spot replacement job cost \$1 for labor and 84¢ for the cost of the lamp (\$1.20 list less 30 per cent non-contract discount). The job cost a total of \$1.84. Proceeding on this basis, in a year's time the spot replacement method becomes an expensive operation.

### **Group Relamping**

The average life of fluorescent lamps is long—7500 hours if lamps burn three hours for each start. At 10 hours per start, which is a common schedule, they average over 11,000 hours. Records show that at this schedule over 90 per cent of the lamps burn beyond 8000 hours (two years).

If all lamps are group replaced before that point, most spot replacement trips are eliminated. Labor cost to bring a quantity of lamps to a given area and relamp on a production basis, is cheaper than a series of drawn-out spot replacements in the same place.

In group relamping, first replace all old lamps with new ones. Save about 10 to 20 per cent of the old ones which still look good. As burn-outs occur among the new lamps, replace them with the saved lamps. When about 5 to 10 per cent of the lamps have burned out, generally after two years operation, the entire installation will have burned most of the average life. At this point you group replace all lamps, again saving 10 to 20 per cent for future replacements. In this way you avoid the rapid burn-out period as the installation approaches the average life point.

Here is a typical money-saving example illustrating a case where group relamping is the most economical way to replace fluorescent lamps for a given period of time:

**INSTALLATION OF 10,500 LAMPS**  
(Labor at \$3 per hour)

### **SPOT REPLACEMENT**

10,500 lamps @ 79¢/lamp. \$ 8,295.00  
Labor cost @ \$1/lamp (20 minutes/lamp; 3 lamps/hr.) ..... \$10,500.00

**TOTAL ..... \$18,795.00**

### **GROUP RELAMPING**

10,500 lamps @/79¢/lamp. \$ 8,295.00  
Labor cost @ 10¢/lamp (2 minutes per lamp; 30 lamps/hr) ..... 1,050.00

Labor to replace 20% interim burnouts @ \$1/lamp ..... 2,100.00

**TOTAL ..... \$11,445.00**

For a given period of time, there will be four spot replacements and five group relamping periods. In this particular case the actual group relamping cost will be 125 per cent of \$11,445, or \$14,056. The user saves \$4,739 over the period.

Mercury and incandescent lamps also can be group relamped for best economy. General service incandescent lamps designed for high efficiency, have an average rated life of 1,000 hours. They are used in locations where labor maintenance cost is nominal. Group replacement is recommended at 800 hours of burning. However, where the 2,500-hour life extended service lamps are used in hard-to-service locations, or where 2,000-hour R-57 reflector lamps are installed in dusty or dirty locations to avoid frequent cleaning, these lamps should be group relamped at 80 per cent of average rated life.

Mercury lamps have a long life, ranging beyond 10,000 hours. As they age in service their light output drops off gradually. Their average economical or useful life is about 7,000 burning hours.

Group relamping has advantages other than economy. As lamps age, their light output drops off, gradually at first, but more so at end of life. Since lights are bought for good "see-ability," group relamping assures peak performance. •

(Resume Reading on Page 42)

## ... Warehouse

(Continued from Page 61)

7. Helps storers obtain bank loan financing through use of negotiable warehouse receipts.

In many instances the public warehouse is more efficient and less expensive than the company-owned and operated warehouse. It provides a service link between the producer, manufacturer, distributor, and consumer.

The services public warehousemen offer go beyond the mere storing and handling of merchandise. They provide important marketing and financial tools to help reduce the cost of physical distribution and transportation.

The storer can contract with a public warehouseman for storing, handling, assembling orders, marking, packaging, record-keeping, delivery (including handling poolcars), carload and less-than-carload shipments, consolidated shipments, cod shipments; city, suburban and long-distance truck deliveries, steamship deliveries, preparation of bills of lading, reporting all shipments or deliveries as they are made, reporting serial numbers and weights, preparing reports of stock in storage at the close of each month's business and maintaining perpetual book, as well as taking physical inventories covering each account and lot.

The public warehouseman is versatile. He provides "traffic manager" service on rail and trucking routes, companies, and rates. He is familiar with water transportation and air freight. He provides storage-in-transit privileges.

In addition, he maintains approved credit lists, authorized by the manufacturer. To jobbers and retailers on this "accredited list" he releases merchandise, within specified limits, without waiting for approval of the order. He accepts orders from the home office, the salesman, and the customers.

With public warehousing, the businessman knows exactly what

his distribution costs per item are going to be. He knows that costs will be in direct proportion to the amount of business done. Rates in public warehouses are assessed on a scientific basis—per case, per barrel, or per hundred. The user pays only for the space he uses and the services he requests. He obtains flexible storage space which may be expanded or contracted as sales grow or fall off. He gets the benefit of highly trained, specialized personnel. He gains efficiency. He saves money.

Public warehousing lets management concentrate on its main objectives—production and sales.

### The Remedy

Just as everyone offers a remedy for the common cold, almost everyone who studies distribution comes up with his own pet remedy. Some say too little attention has been given to the distribution end of business. I cannot agree. I do agree that too little attention has been given to control of distribution costs by the lack of proper analysis.

Congress should appropriate sufficient monies to finance a comprehensive study of distribution and its costs. A good study would help industry stabilize its distribution programming.

There has been a lack of uniformity among users of public warehousing as to which company official should be responsible for warehouse selection and services. The properly trained and experienced traffic manager is the most logical authority to select for this job.

The traffic manager is familiar with the advantages of public warehouse services. He recognizes that locations of public warehouses often depend on advantageous transportation facilities. He is familiar with transportation problems and service.

With the traffic manager handling warehousing and transportation, the production manager concentrates on production, the sales manager on sales. In this way management achieves an efficient program that coordinates production, sales, and traffic. This is top level physical distribution. •

(Resume Reading on Page 62)

EDITOR'S NOTE: Mr. Cooke's remarks are excerpted from an address before the Third Annual Michigan Traffic and Transportation Conference, at Michigan State University.



Cuts Cargo Damage  
On Everything



from Bakery Trucks

Ralphs Grocery Co. needed extra heavy-duty equipment to secure stacks of loaded bread trays in transit. General Logistics recommended its aluminum aircraft track and aircraft cargo ring fittings with strength up to 5000 lbs.



To Satellite Tracking Camera

To move the earth satellite tracking camera 816 miles, Bekins Van Lines Company secured all parts with heavy-duty (up to 3500 lbs.) Tension-Locking WEBLOCK Strap Assemblies that tighten with a pull... release with fingertip pressure.



General Logistics Truck Cargo Control System is simple, versatile. Steel or aluminum notched track is installed inside truck or trailer. TRACKLOCK end fittings attach WEBLOCK Strap Assemblies... spring-loaded end fittings attach steel shoring bars... quickly, easily.

WEBLOCK and TRACKLOCK are Aeroquip Trademarks

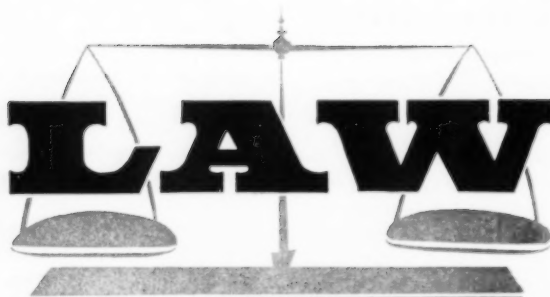
General LOGISTICS  
A DIVISION OF Aeroquip CORPORATION

P. O. Box 1071-M, Pasadena, Calif. DA-8  
Please send information on Aeroquip Cargo Control System.

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_

Circle No. 17 on Card, Facing Page 49

# Within the



By Leo T. Parker Legal Consultant, Distribution Age

## TRANSPORTATION

**Can an employe or agent earn money while serving his employer and not account for it?**

I received an interesting letter from an official of a large trucking company, in part, as follows: "Can an employe or agent earn money while serving his employer and without accounting to his employer?"

The answer is: The duties of an employe or agent toward his principal's business are well recognized. He may not profit personally in any way at the expense of his principal and in violation of his trust agreement. He must at all times act in the utmost good faith, honesty and integrity. On the other hand, last month a higher court held that if an employe or agent personally earns money while serving an employer or other principal without violating these legal rules, he is within the law.

For illustration, in *W— T—, Ltd.*, 247 Fed. (2d) 194, one *B—* sued *W— T—, Ltd.* for breach of contract. The jury awarded *B—* \$45,017.19 damages.

The facts are: The *W— T—, Ltd.* is engaged in the truck transportation business, and it desired the services of *B—* to act as agent for the operation of the vehicles between Denver and Pueblo, Colorado, Arizona and California. The contract between *W— T—, Ltd.* and *B—* provided that *B—* was to act as such agent for *W— T—, Ltd.* for a period of five years, with the option to renew the agreement for another five years. Almost immediately disagreements arose between the parties and one year later another contract was signed and executed, providing that all revenues received from *B— Truck Lines* pursuant to interline shipments originating east of the territory served by *W—* should be paid directly to *W—*, without accounting to *B—* therefor. Disagreements continued

and *W— T—* served notice of cancellation of the contract. *B—* asked the court for \$800,200 damages for breach of the contract.

The legal counsel contended that the *W— T—, Ltd.* had a legal right to cancel the contract for several reasons among which was that *B—* used his own trucks for transporting merchandise and that he used these trucks for transporting merchandise on return trips without accounting to *W— T—, Ltd.* for any profits. Approving the jury's damage award of \$45,017.19 to *B—* and in holding that *W—* had no legal right to cancel the contract, the court said:

"It is contended that *B—* violated his fiduciary responsibility by renting his own trucks owned by his own corporation to be used in hauling this produce. Under the contract, it was *B—*'s duty to obtain the trucks to transport this merchandise. There is nothing whatever in the contract which prevented him from using his own trucks, so long as the charges therefor were no more than what other trucks could be hired for. The trucks, of course, had to return to the place from which they started if they could be used again. Whenever possible, *B—* obtained a return load of merchandise. Out of this he made a profit. It is without dispute that *W— T—, Ltd.* had no interest in the trucks after they reached California. Their connection with its business was then at an end."

## WAREHOUSING

**If a finance company takes warehouse receipts as security, is the loan on receipts or stored goods?**

A higher court recently answered this legal question: When a finance company, or other lender of money takes warehouse receipts as security, is the money loaned on the warehouse

receipts or on the stored merchandise?

In *I— v. C— Corp.* 166 N. Y. S. (2d) 343, testimony showed facts: A man named *A—* owned warehouse receipts representing merchandise stored in a warehouse in the State of New York. He assigned the warehouse receipts and gave his note to the *W— Co.* as security for money loaned or advanced to him by the latter corporation. The rate of interest specified in the note was usurious under the ordinary state laws. However, Section 379 of the General Business Law of New York State specifies that additional compensation or interest may be demanded by the company lender.

In subsequent litigation *A—* argued that usurious laws of the State are applicable because the *W— Co.* did not loan the money on the security of the warehouse receipts, but the security was the merchandise stored in the warehouse.

The higher court refused to agree with this argument and in holding that *A—* must pay to the *W— Co.* full amount of the loaned money, plus interest in excess of the lawful rate of interest allowable. The court said:

"The court holds that the *W— Co.* has sustained its contention that the money was loaned upon the security of the warehouse receipts with the note as further evidence. Therefore the loans are not usurious under Section 379 of the General Business Law."

This higher court went on to explain that because of the bulk of ordinary merchandise it is of necessity placed in a warehouse for storage, and the warehouse receipts issued by the warehouseman can be used as security or collateral for loans. Hence, a warehouse receipt is symbolic of possession of the merchandise. The value of the merchandise covered by a warehouse receipt cannot be determined by the warehouse receipt, and the warehouseman is not responsible if the receipt is erroneous in this respect.



## AWA Merchandise Division Adds 12 Warehouses to Membership

Twelve new members have been admitted to the Merchandise Division of the American Warehousemen's Association.

They are: W. J. Beitler Co., Pittsburgh; Brooklyn Terminal Stores, Brooklyn, N. Y.; Citizens Transfer and Storage Co., Tucson, Ariz.; Colonial Warehouse, Inc., Miami, Fla.; Corpus Christi Warehouse and Storage Co., Corpus Christi, Texas; General Public Warehouse Co., Inc., Philadelphia; Kencroft Warehouse, Division of Kencroft Malleable Co., Inc., Buffalo, N. Y.; Los Angeles Transport and Warehouse Division, Houston, Texas; Storit Warehouse, Inc., Chicago; Texas Express Co., Dallas, Texas; and Universal Terminal Warehouse Co., Houston, Texas.

—DA—

*The 1959 Annual Meeting of the American Warehousemen's Association will be held in the Statler and Mayflower Hotels, Washington, D. C., April 5-9.*

—DA—

### Men in the Spotlight

**Arthur D. Appleby, Jr.**—appointed international sales manager for Engle Brothers, Inc., Elizabeth, N. J.

**W. Stanley Huggett**—elected vice president in charge of marine operations for the North Pier Terminal Co., Chicago.

**S. H. Smith**—promoted to executive vice president of Republic Van & Storage Co., Los Angeles. **Orville K. Ferry**—becomes vice president and secretary, and **Jan Fischer**—treasurer and member of the Board.

**W. C. Baker**—elected to the Board of Directors of the Produce Terminal Cold Storage Co., Chicago.

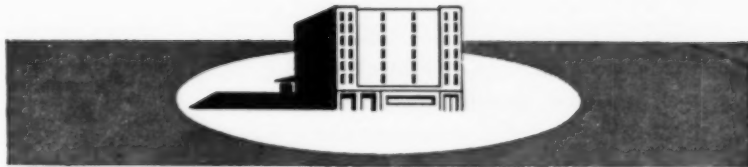
**Oscar F. Locke, Sr.**—vice president, Terminal Cold Storage & Ice Co., Dayton, Ohio, recently died.

**L. M. Ashenbrenner**—elected president of Great Lakes Terminal Warehouse Co., Toledo, Ohio.

**H. C. Metzler**—president of the Morton Cold Storage Co., Morton, N. Y., died recently.

**Charles H. Hoffberger**—new chief executive officer of the Merchants Terminal Corp., Baltimore and Landover, and the Terminal Refrigerating & Warehousing Corp. in Washington.

# Warehouse SPOTLIGHT



### Warehouse Briefs

**Baltimore Fidelity Warehouse Co.**, Baltimore, has changed its name to Western Maryland Warehouse Company.

**North American Van Lines, Inc.**, has appointed Transportes M y Mas its agent in Mexico.

Newly elected officers of the **Association of Cleveland Warehousemen** are: Herbert C. Neal, president; John Macey, vice president; and John W. Waller, secretary-treasurer.

**Earl E. Finger** recently was elected president of the **Washington State Warehousemen's Assn.**

**Fuchs Transfer Co.**, Baltimore, recently moved top-secret material pertaining to ballistic missiles from Air Research and Development Command buildings in Baltimore to Andrews Air Force Base near Washington.

**Commercial Warehouse Co.** announces the opening of its new one-story warehouse in Little Rock, Ark.

**The Mayflower Warehousemen's Assn.** Chicago District meeting will take place September 26-27.

New appointees of **Aero Mayflower Transit Co., Inc.**, are **Mussell Transfer Co.**, Poplar Bluff, Mo.; **Palmeaster Moving & Storage Co.**, Lancaster, Cal.; **Acushnet Van & Storage, Inc.**, Hyannis, Mass.; **Twin City Transfer and Storage Co.**, Barre, Vt.; **Blaney Transfer & Storage**, Worland, Wyo.; and **May Moving & Storage Warehouse**, Kings Beach, Cal.

**National Van Lines, Inc.**, has moved to Broadview, Ill.

**Strohm Warehouse and Cartage Co., Inc.**, Indianapolis, Ind., has installed TWX service and is enlarging its Raymond St. warehouse.

—DA—

*National Van Lines will hold its Annual Convention in Chicago, October 9-11.*

### NFWA Announces 8 Conferences

Conferences to acquaint the household goods moving industry with technical advances have been scheduled for eight cities by the National Furniture Warehousemen's Association.

President **Daniel P. Bryant** has released the following schedule: August 22, Charlotte, N. C.; August 25, Columbus, Ohio; September 5, Portland, Ore.; September 8, Los Angeles; October 10, Lawrence, Kas.; October 17, St. Louis; October 20, Monticello, N. Y.; and October 24, Baltimore, Md.

—DA—

*The Southeastern Warehousemen and Movers' Association will hold its annual convention at the Roosevelt Hotel in New Orleans on September 18, 19, and 20.*

### New Warehouse



Construction has started on a one-story public warehouse in Atlanta, Ga., for the **D. H. Overmyer Warehouse Co.** The warehouse is located in the Chattahoochee Industrial District.

# Warehouse Directory

Listed below are the more than 300 public warehouses whose services are advertised in this issue of DISTRIBUTION AGE. The listing is alphabetical by city and state. Included are general merchandise warehouses, refrigerated warehouses, and household goods warehouses. Also listed are certain warehouse sales organizations.

Additional information on the services and facilities of particular warehouses shown in the listing can be obtained by turning to the advertisements on the following pages. The advertisements appear in the same geographical, alphabetical sequence as the listings below. Still more information can be had by writing directly to the warehouse.

**ALABAMA**  
**Birmingham**  
 American Tfr. & Whse. Co., Inc.  
 Harris Warehouse Co.  
 Strickland Tfr. & Whse. Co.  
**Dothan**  
 Security Bonded Whse.

**ARIZONA**  
**Phoenix**  
 Lightning Mvg. & Whse.  
 Thunderbird Tfr. & Stge. Co.  
 Triple X Transfer, Inc.

**ARKANSAS**  
**Little Rock**  
 Commercial Warehouse Co.  
 Terminal Warehouse Co.

**CALIFORNIA**  
**Long Beach**  
 Signal Trucking Service Ltd.  
**Los Angeles**  
 Bekins Warehousing Corp.  
 Overmyer Whse. Sales Co.  
 Pacific Coast Terminal Whse. Co.  
 Pacific Commercial Whse., Inc.  
 Signal Trucking Service Ltd.  
 Star Truck & Whse. Co.  
**Oakland**  
 Howard Terminal  
**San Diego**  
 Lyon Van & Storage Co.  
**San Francisco**  
 San Francisco Whse. Co.

**COLORADO**  
**Colorado Springs**  
 Welcker Tfr. & Stge. Co.  
**Denver**  
 Larsen Tfr. & Stge. Co.  
 North Denver Tfr. & Stge.  
 Welcker Tfr. & Stge. Co.  
**Pueblo**  
 Burch Whse. & Tfr. Co., Inc.  
 Welcker Tfr. & Stge. Co.

**CONNECTICUT**  
**Danbury**  
 Shepard's Warehouse  
**Hartford**  
 George E. Dewey & Co.  
 Hartford Despatch & Whse. Co., Inc.  
**New Haven**  
 Atlantic Bonded Whse. Corp.  
 Davis Storage Co.  
 Smedley Company  
**Stamford**  
 Schaefer, Inc.

**DELAWARE**  
**Dover**  
 Delmarva Whses., Inc.  
**DISTRICT OF COLUMBIA**  
**Washington**  
 Kane Warehouse Company  
 Terminal Stge. Co. of Wash.

**FLORIDA**  
**Jacksonville**  
 Laney & Duke Stge. Whse. Co., Inc.  
**Miami**  
 M & M Term'l. Whse. Company  
 Peninsular Whse. Company  
 Union Terminal Whse. Co.  
**Miami**  
 Colonial Warehouse, Inc.  
 International Bonded Whse. Corp.  
 Ryder Bonded Whse.  
 Santini Bros., Inc.  
**Tampa**  
 Caldwell Bonded Whses.

**GEORGIA**  
**Atlanta**  
 American Bonded Whse.  
 Coweta Bonded Warehouse  
**Savannah**  
 Savannah Bonded Whse. & Tfr. Co.

**HAWAII**  
**Honolulu**  
 City Transfer Co., Ltd.  
 H C & D Mvg. & Stge.

**ILLINOIS**  
**Cairo**  
 Cairo River & Rail Whses.  
 Hudson Warehouses  
**Chicago**  
 Affiliated Whse. Companies  
 Allied Distribution, Inc.  
 American Chain of Whses., Inc.  
 Anchor Storage Co.  
 Associated Warehouses, Inc.  
 Crooks Terminal Whses., Inc.  
 Currier-Lee Whses., Inc.  
 Equipment Storage Corp.  
 Excel Bonded Warehouse  
 Griswold & Bateman Whse. Co.  
 Grove Storage Co., Inc.  
 Joyce Bros. Stge. & Van Co.  
 Lincoln Mayflower Whses.  
 Majestic Whses., Inc.  
 Midland Warehouses, Inc.  
 North Pier Terminal  
 Overmyer Whse. Sales Co.  
 Packers Term'l. & Whse. Corp.  
 Producers Warehouse Co.  
 Riverside Warehouse  
 Sop Terminal Whse.  
 Sylkes Terminal Whse. Co.  
 Thomson Terminals, Inc.  
 Victor Stge. & Mvg.  
 Wakem & McLaughlin, Inc.  
 Western Warehouse Co.

**East St. Louis**  
 Columbia Terminals Co.  
 Mississippi Avenue Whse.  
 National City Public Whse.  
**Joliet**  
 Joliet Whse. & Tfr. Co.  
 Transit Whse. & Dist. Co.  
**Kankakee**  
 Belt Route Whse. & Stge. Co.  
**Pekin**  
 Kriegsman Transfer Co.  
**Peoria**  
 United Facilities, Inc.  
**Vandalia**  
 Vandalia Whse. Corp.  
**Waukegan**  
 Victor Storage & Mov.

**INDIANA**  
**Elkhart**  
 Schult General Warehouse  
**Evansville**  
 Beeler Warehouse Corp.  
 Ingie Street Whse. Co.  
 Mead Johnson Terminal Corp.  
 Terminal Whse., Inc.  
**Fort Wayne**  
 Fort Wayne Storage Co., Inc.  
 Mitchell Sales & Stge., Inc.  
 Pettit Whses., Inc.  
**Hammond**  
 Illiana Storage Co., Inc.  
 Nowak Warehouses, Inc.

**Indianapolis**  
 Indiana Term'l & Refrig. Co.  
 Indianapolis Whse. & Stge. Co., Inc.  
 Merchandise Whse. Co., Inc.  
 Strohm Whse. & Cartage Co.  
 Tripp Warehouse Company  
**Muncie**  
 Oren-Shirley Whses.

**IOWA**  
**Cedar Rapids**  
 American Tfr. & Stge. Co.  
 Cedar Rapids Tfr. & Stge. Co.  
 Dubuque Stge. & Tfr. Co.

**KANSAS**  
**Kansas City**  
 G-K Warehouses, Inc.  
 Transit Warehouses, Inc.  
**Wichita**  
 Brokers Office & Whse. Co.  
 Merchants Van & Stge. Co.  
 Service Transfer, Inc.  
 United Warehouse Company  
 Yellow Van Moving & Stge. Co.

**KENTUCKY**  
**Louisville**  
 Louisville Public Whse. Co.  
 Mid-Land Warehouse Co., Inc.

**LOUISIANA**  
**New Orleans**  
 H. G. Bauer Mvg. & Stge.  
 Commercial Term'l Whse., Inc.  
 Gulf Shipside Storage Corp.  
 Hayes Drayage & Storage, Inc.  
 Jackson Warehouses, Inc.  
 Maloney Tking. & Storage, Inc.  
 Standard Warehouse Co., Inc.  
**Shreveport**  
 Herrin Tfr. & Whse. Co., Inc.

**MAINE**  
**Bangor**  
 Galt Block Warehouse Co.  
 McLaughlin Warehouse Co.

**MARYLAND**  
**Baltimore**  
 Camden Warehouses  
 Davidson Transfer & Stge. Co.  
 Rowley Transportation

**MASSACHUSETTS**  
**Boston**  
 Charles River Stores operated by Merchants Whse. Co.  
 Hoosac Storage & Whse. Co.  
 Kelso Warehouses, Inc.  
 National Dock & Stge. Whse. Co.  
 Wiggins Terminals, Inc.  
**Springfield**  
 Pioneer Valley Refrig. Whse., Inc.  
 J. J. Sullivan the Mover, Inc.

**MICHIGAN**  
**Detroit**  
 Central Detroit Whse. Co.  
 Detroit Harbor Term'l. Inc.  
 Grand Trunk Whse. & C. S. Co.  
 Jefferson Terminal Whsp.  
 Lake Shore Warehouse Inc.  
 United States Cold Stge. Corp.  
**Saginaw**  
 Central Warehouse Co.

**MINNESOTA**  
**Minneapolis**  
 Minneapolis Terminal Whse. Co.  
**St. Paul**  
 Security Warehouse Co.  
 Central Warehouse Co.  
 St. Paul Term'l Whse. Co.

**MISSOURI**  
**Joplin**  
 Sunflower Tfr. & Stge. Co.  
**Kansas City**  
 Central Storage Co.  
 Crooks Terminal Whses., Inc.  
 Evans Whse. Service  
 G-K Whses, Inc.  
 Jacobs Warehouse Co., Inc.  
 Kansas City Term'l Whse. Co.  
 Midwest Terminal Whse. Co.  
**St. Louis**  
 Distributors Whse.  
 Keystone Warehousing Co.  
 S. N. Long Warehouse  
 Madison St. Term'l Whse. Corp.  
 Rutger St. Whse., Inc.  
 St. Louis Terminal Whse. Co.  
 Tyler Whse. & Cold Stge. Co.  
 Warehousing Corp. of Mo., Inc.  
**Springfield**  
 General Warehouse Corp.

**NEBRASKA**  
**Lincoln**  
 Sullivan Tfr. & Stge. Co.  
**Omaha**  
 Ford Stge. & Mvg. Co.  
 Gordon Stge. Whses., Inc.  
 Knowles Stge. & Mvg. Co.  
 Omaha Central Whse. Co.  
**NEW HAMPSHIRE**  
**Manchester**  
 McLane & Taylor Corp.

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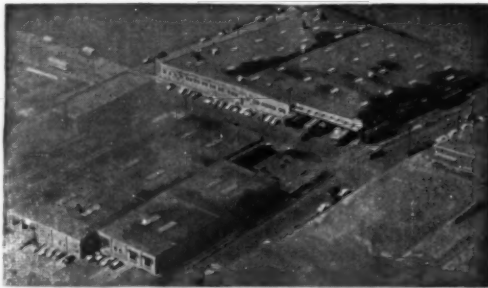
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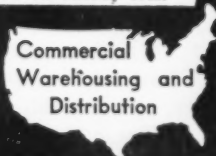
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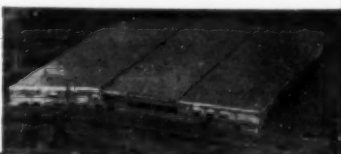
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Complete Bonded Service with Extensive Facilities  
Kansas Ave. and Railroad St., Kansas City 5, Kansas  
Represented by Affiliated Warehouse Companies

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### TRANSIT WAREHOUSES INC.

59 EWING ST., KANSAS CITY 18, KANSAS  
OVER 175,000 SQUARE FEET CLEAN MODERN SPACE  
ADT PROTECTED—FIREPROOF—SPRINKLERED  
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KANSAS BONDED WAREHOUSE

## WICHITA, KANSAS

### Brokers Office & Warehouse Co. A Modern Distribution and Warehouse Service

149 North Rock Island Ave., Wichita 2  
B. W. BILLINGSLEY, JR., Manager  
Member of American Chain of Warehouses



## WICHITA, KANSAS

### MERCHANTS Van & Storage Company



619 E. William St., Wichita 2, Kansas

Household Goods & Merchandise  
Storage, Free Switching—Sprinkler  
System

Member of NFWA—AVL



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Phone: TE 8-1445

### SERVICE TRANSFER, INC.

3201 North Mead, Wichita 4, Kansas

New Fireproof Brick Warehouse—A.D.T. Protected. Commercial  
Storage and Distribution. Vault Container Storage for Household  
Goods. Santa Fe Siding.

Agent for King's Van & Storage and Ford Van Lines, Inc.

## WICHITA, KANSAS

SINCE 1915

### UNITED WAREHOUSE CO.

811 E. Waterman & 144 So. Mosley, Wichita, Kans.

Merchandise Storage—Pool Car Distribution

In our NEW one-story, dock high, brick warehouse,  
THE FINEST IN THE MID-WEST. Low Insurance Rates.  
Private sidings on Frisco & S.F. Reciprocal switching.

Member of A.W.A.—Wichita W & T A



### WICHITA YELLOW VAN

MOVING & STORAGE CO.

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Over 140,000 sq. ft. Merchandising Stor-  
age. Office space and telephone answer-  
ing service available. Low insurance  
rates. A.D.T. Fire and Burglary Protection.  
Kansas' largest Govt. Crating Contractors.  
Private siding C.R.I.&P., A.T.&S.F., Frisco.



## LOUISVILLE, KY.

### LOUISVILLE PUBLIC WAREHOUSE COMPANY

1450 South 10th St., Louisville 10, Ky.

11 WAREHOUSES

397,000 Square Feet of Floor Space

Merchandise Storage and Distribution

MEMBER—A.W.A.—American Chain—Distribution Service, Inc.

## LOUISVILLE, KY.

Louisville's Newest and Most Modern  
Warehouse Assures You the Fastest  
and Most Careful Handling of Your  
Merchandise.

- 140,000 Sq. feet (1 Floor Plan)
- Private Siding (20 Cars)
- Reciprocal Switching
- Storage In-Transit
- Sprinkler Protection
- Modern Handling Equip.

Phone Us Collect  
EMerson 7-1754

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WAREHOUSE COMPANY  
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LOUISVILLE 14, KENTUCKY

NEW ORLEANS, LA.

Established 1923



**H. G. BAUER**

1111 Barracks St.  
New Orleans 16, La.

Household Goods Storage  
Local & Long Distance Moving  
EXPORT CRATING & SHIPPING



Agents  
**UNITED VAN LINES INC.**

Moving With Care "Everywhere"

PACKING — SHIPPING — MODERN EQUIPMENT  
Phone Jackson 2-1388 Teletype TWX 44 Cablegram BAUERSTOR

NEW ORLEANS, LA.

E. B. FONTAINE, JR., Pres.  
M. E. FONTAINE, Sec.  
R. A. CARUSO, Treas.

**COMMERCIAL TERMINAL  
WAREHOUSE, INC.**

INCORPORATED

Established 1910

A dependable agency for the  
storage and distribution of  
merchandise and manufactured  
products.

Member of



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**GULF SHIPSIDE  
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- ✓—SHIPSIDE STORAGE
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Represented Nationally by DISTRIBUTION SERVICE, INC.

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833 So. Front Street — New Orleans, La.

Public bonded warehousemen — drayage (pick-up  
and delivery) — Labeling and distributing — im-  
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cotton warehousing, compressing and weighing.



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New Orleans Merchandise Warehousemen's Ass'n

**MALONEY TRUCKING & STORAGE, Inc.**

133 NORTH FRONT ST., NEW ORLEANS 1

As Able servant to the PORT OF NEW ORLEANS

Complete warehousing facilities—Distribution—Weighing—  
Forwarding—Fumigating—Storage—Cartage—Field Ware-  
housing—Office Space—Display Rooms—Sprinklered Risk.  
UNITED STATES AND STATE BONDED



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In the Jackson Tradition

**JACKSON WAREHOUSES, INC.**

*Safe-Convenient-Efficient*

A complete Shipping & Warehousing Service  
Full Insurance Coverage—7¢ Per \$100 Per Yr.

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2941 ROYAL STREET NEW ORLEANS, LA.

An Affiliate of S. Jackson & Son, Inc.—Dedicated to  
Efficient, Dependable & Trustworthy Service Since  
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100 Poydras St. — New Orleans 8, La.

MERCHANDISE STORAGE—POOL CAR DISTRIBUTION



Located in the Heart of the Wholesale District • Con-  
venient to Rail & Truck Depots • Private Switch Tracks T &  
NO-SP RR • Reciprocal Switching  
COMPLETE WAREHOUSING SERVICE

SHREVEPORT, LA.

**Herrin Transfer and Warehouse Co., Inc.**

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COMPLETE DISTRIBUTION SERVICE

Member

American Warehousemen's Association

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M. H. Sanborn, Mgr.

**THE GALT BLOCK WAREHOUSE COMPANY**

242 Miller St., Bangor, Maine

STORAGE FOR MERCHANDISE AND FURNITURE. STORAGE-IN-  
TRANSIT ON CANNED GOODS, PAPER, BEANS, ETC. DIRECT RAIL  
CONNECTIONS WITH ALL ROADS  
CRATING—PACKING—SHIPPING

Queen City—Gateway to Eastern Maine  
Agents, Allied Van Lines, Inc.

BANGOR, MAINE

**McLAUGHLIN WAREHOUSE CO.**

Established 1875

Incorporated 1918

*General Storage and Distributing*

Rail and Water Connection—Private Siding

Member of A.C.W.—A.W.A.—N.F.W.A.

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C. J. Neuner, Supt. & Treas.

**CAMDEN WAREHOUSES**

Camden Station, Baltimore 1

Operating Terminal Warehouse on Tracks of

The Baltimore & Ohio Railroad Co.

A. D. T. Private Watchman, Sprinkler

Storage—Distribution—Forwarding

Tobacco Inspection and Export—Low Insurance Rates

Consign Via Baltimore & Ohio Railroad

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**Complete Warehousing Services**

Moving • Storage • Packaging  
Packing • Crating • Processing



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Cable: DAVTRANSCO

**DAVIDSON**  
TRANSFER & STORAGE CO.

A. W. A.  
M. W. A.  
A. T. A.  
N. F. W. A.  
M. M. T. A.  
P. I. D. I.

and Firms are Arranged Alphabetically

## BALTIMORE, MD.

### POOL CAR DISTRIBUTION

We know how

B & O PRIVATE COVERED RAIL SIDING

Trucking—Warehousing

Local & Over-the-Road Service  
EDMONDSON 6-5600

MEMBERS

N.M.T.A. & A.T.A.

## ROWLEY Transportation

601 S. FULTON AVE.  
BALTIMORE 23, MD.

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CHARLES RIVER STORES  
131 Beverly Street, Boston 14, Mass.

Owned and Operated by

### MERCHANTS WAREHOUSE COMPANY



Facilities—230,000 square feet. Private siding  
Boston & Maine Railroad. Trucks served from  
private area. General Merchandise storage. U. S.  
Customs Bonded Space. Located on Boston's new  
Arterial Highway



Member AWA—MWA Represented by Allied Distribution, Inc.

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### Hoosac Storage & Warehouse Company

Lechmere Square, East Cambridge 41, Boston  
FREE AND BONDED STORAGE

A.D.T. Automatic Fire Alarm

Direct Track Connection B. & M. R. R.

Lechmere Warehouse, East Cambridge, Mass.

Hoosac Stores, Hoosac Docks, Charlestown, Mass.

Warren Bridge Warehouse, Charlestown, Mass.

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### New England's Most Complete Distribution Service

#### KELSO WAREHOUSES, INC.

1 UNION WHARF, BOSTON 13, MASS. Lafayette 3-3000

Single Management Combining Motor Transportation  
Distribution, Storage and Consolidation

Affiliated with Chelsea Contracting & Trucking Co., Chelsea 50, Mass.

### Using Public Warehouses

Dr. John H. Frederick has written a new book. The book, "Using  
Public Warehouses," is on sale through this office. Write: The  
Editor, DISTRIBUTION AGE, Chestnut & 56th Sts., Phila. 39, Pa.  
Price, \$5.

## BOSTON, MASS.

93 Years of Dependability 1865-1958

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STRATEGIC LOCATION • EXTENSIVE FACILITIES • RELIABLE SERVICE

25 Lewis St. • East Boston 28, Mass. • LO 9-0050

## Unexcelled Facilities For All Storage Needs

Wiggin Terminals gives the  
benefit of many years ex-  
perience. Excellent labor  
relations. Safe, modern  
handling equipment and  
trained personnel speeds  
work along.



### WAREHOUSES LUMBER TERMINALS

Write or phone for a complete illustrated brochure showing how  
WIGGIN can serve you.

Represented by American Chain of Warehouses, Inc. & Distribution Service, Inc.

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50 Terminal Street, Boston 29, Massachusetts

Telephone CHarlestown 2-0880

## SPRINGFIELD, MASS.

General Cold Storage

### Pioneer Valley Refrigerated Warehouse, Inc.

P. O. Box 155

Brightwood Station

Whse.: Steel & concrete, automatic fire & burglar alarms—A.D.T. TS Area 1,000,000  
sq. ft. FI Ld 330 lbs. CI Ht 8-10 ft. Elev cap 6,000 lbs. Priv siding 50-car cap on. &  
foreign shipments via B&M; sta. Brightwood; free switching. 100% palletized.  
Temp. range—10° to 40°. Humidity control. 15-ft. dock. Specialize in frozen foods.  
Open yard steps. Dr. Office facilities. Loans on stored commodities. Printed tariff.

Member of the A. W. A. (Cold Storage Div.)

## SPRINGFIELD, MASS.



### J. J. SULLIVAN THE MOVER, INC.

385 LIBERTY ST.

SPRINGFIELD 1

Merchandise and Household Goods  
Private Siding—Pool Car Distribution  
Heavy Hauling & Trucking—Furniture  
Packing & Crating—Local & Long Distance  
Moving Rigging & Truck Crane Service

## Warehouse . . .

(Continued from Page 55)

Bigelow, for example, included in its new building  
a carpet cleaning training laboratory. In addition,  
the company's eastern regional sales headquarters  
is located there.

The Bigelow warehouse operation is tailored to the  
company's teletype system. This network of auto-  
matic teletypes connects the district sales offices with  
the warehouse. When an order is initiated, a pre-  
punched tape on file at the sales office automatically  
records individual service and billing information  
for the dealer concerned. The only manual opera-  
tion of the sending clerk at the district office is tele-  
typing the quantity, size, and pattern of the order.  
The only manual operation of the clerk at the ser-  
vice center is adding register number and yardage.

As the order is received, the teletype machine at  
the warehouse automatically cuts a tape recording

the order. This is fed into the house teletype circuit  
for automatic transmittal to the shipping depart-  
ment. During this operation, the house circuit pro-  
duces all the forms that are required for billing,  
shipping, control of delivery, and permanent records.

In the San Francisco warehouse of Acme Paper  
Co., space has been set aside for a temperature-con-  
trolled cellophane converting room. There also is a  
special sales and display room where customers may  
meet sales representatives and inspect products.

Rogers Drug Co. also has included other service  
facilities in its warehouse. These include an air  
conditioned meeting room available to professional  
groups and a model drug store incorporating the  
newest designs in display fixtures.

Rogers, to permit an uninterrupted flow of mer-  
chandise to and from its warehouse, has installed  
electronically operated doors. Another application  
of electronics is the use of a sonar alarm system for  
the protection of narcotic stocks. •

(Resume Reading on Page 56)

DETROIT, MICH.



### CENTRAL DETROIT WAREHOUSE

Located in the heart of the wholesale and jobbing district, within a half-mile of all freight terminals. Modern buildings, lowest insurance rate in city.

WAREHOUSE & TERMINALS CORPORATION  
Wyoming and Brandt Avenues

Modern concrete buildings, fully sprinklered, serving the west side of Detroit and the city of Dearborn. Specializing in heavy and light package merchandise and liquid commodities in bulk. Connected directly with every railroad entering the city.

**Central Detroit Warehouse Co.**

Fort and Tenth Streets, Detroit 16, Mich.



### Detroit's ONLY Waterfront Terminal Offers You EVERY Facility . . .

A quarter-mile-long marine dock . . . 44 delivery doors under cover . . . our own switching facilities . . . direct connections with Wabash, Pennsylvania and C. & O. Railroads . . . reciprocal switch to all other lines . . . all storage in transit privileges . . . 10-story reinforced concrete warehouse with 5,000,000 cubic feet general storage, 2,500,000 cubic feet cold storage . . . completely sprinklered . . . fully equipped for inside and outside loading . . . inside track 25 car capacity . . . tenant and office space also available.

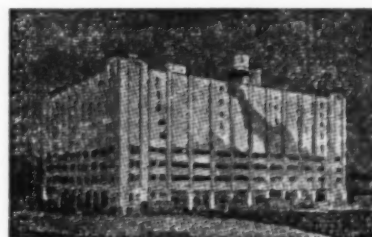
**Detroit Harbor Terminals, Inc.**

4461 West Jefferson TA 5-3200 Detroit 9, Michigan

For Shippers' Convenience, States, Cities

## STORAGE CARTAGE POOL CAR DISTRIBUTION

Every modern warehousing facility is available. Desirable office space. Car icing. Financing. Dry and refrigerated storage. In-transit privileges. Minimum insurance. Blast quick freezing rooms. Modern palletized equipment. Free reciprocal switching—all railroads. Continent wide connections.



### GRAND TRUNK WAREHOUSE AND COLD STORAGE COMPANY

W. J. LAMPING, Exec. V. P. & Gen. Mgr.

1921 E. FERRY AVE., DETROIT 11, MICHIGAN

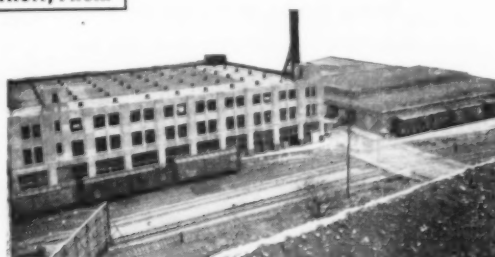
G. T. Rwy. Siding

WAlnut 1-8380

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DETROIT, MICH.



### In Detroit It's JEFFERSON For Complete Warehousing and Distribution

Private Siding, Reciprocal Switching,  
Local Delivery via Our Own Trucks  
Reshipment to any Point  
Pool Car Distribution

200,000 sq ft of floor space. Modern building, completely sprinklered and fully protected by A.D.T. Excellent location. Mechanized for fast handling. Prompt reply to all inquiries.

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MEMBER OF DISTRIBUTION SERVICE, INC.



and Firms are Arranged Alphabetically

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Merchandise Storage — Pool Car Distribution

Centrally located for all wholesale groceries

Grand Trunk R.R. 6 Car Siding

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The Best is U. S. in  
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COMPLETE WAREHOUSING FACILITIES  
**United States  
Cold Storage  
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8 STORY BUILDING  
800,000 SQ. FT.  
FLOOR SPACE  
30 TRUCK SPOTS  
10 RAILWAY  
SPOTS  
7 FREIGHT ELEVATORS

An Associated Warehouse

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SINCE 1912

### OUTSTANDING WAREHOUSE SERVICE

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1825 Rust Avenue

SAGINAW, MICHIGAN

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### OUTSTANDING WAREHOUSE SERVICE

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## MINNEAPOLIS, MINN.

Established 1888

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MINNEAPOLIS 1, MINNESOTA

PHONE FEDERAL 3-1281

Merchandise Storage  
Pool Car Distribution, Local Trucking  
Industrial Trackage Space

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### A COMPLETE WAREHOUSING SERVICE

Merchandise Storage—Cold Storage

Pool Car Distribution—Industrial Facilities

Situated in the Midway, the center of the Twin City Metropolitan area, the logical warehouse from which the Twin Cities and the Great Northwest can be served from one stock, with utmost speed and economy.

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REctor 2-1580



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Joplin, Mo.



Distribution and storage of merchandise.  
Fireproof Warehouses—Motor van service.  
On railroad siding—Lowest Insurance rates.

PACKING—STORAGE—SHIPPING  
AGENT FOR NATIONAL VAN LINES



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78th YEAR "The Symbol of Service"

CENTRAL STORAGE COMPANY has been serving distributors of merchandise (since 1880) longer than any other public merchandise warehouse in Missouri. There is no real substitute for experience. Our methods are standing the test of time and practical usage. New methods and equipment are being employed and still newer ones will be adopted as their use becomes practical in better serving our customers.

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1422 ST. LOUIS AVENUE (West 10th St.)

KANSAS CITY 1, MISSOURI



Represented by DISTRIBUTION SERVICE, INC.  
New York—Chicago—San Francisco

## KANSAS CITY, MO.

TRY—

### EVANS WAREHOUSE SERVICE

in  
KANSAS  
CITY

1325-1327 St. Louis Avenue • Phone Ba-ltimore 4135

GENERAL MERCHANDISE WAREHOUSING  
POOL CAR DISTRIBUTION

We operate our own fleet of motor trucks. Loading docks: R. R. siding Missouri Pacific. Inquiries answered promptly.

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**3 Choicely Located Warehouses**  
give you finest Warehousing, Distributing  
facilities in the booming Kansas City area



Brokers Bldg.  
1104 Union Ave.



Terminal Bldg.  
1209 Union Ave.



Security Bldg.  
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**3 warehouses offering these A-plus advantages:**

Modern Facilities  
Responsible Management  
Spacious Switch Tracks  
Ample Truck Loading Doors  
Fleet of Motor Trucks

Cooler Rooms  
Storage in Transit  
Office Space  
Display Rooms  
Financing

OFFERING COMPLETE BRANCH HOUSE FACILITIES:  
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Associated with Overland Terminal Warehouse Co.  
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We own 400,000 sq. ft. of space  
Sprinklered Building  
Central Alarm System  
Pool Car Distribution  
Branch Office Facilities

OWN AND OPERATE OUR OWN CARTAGE COMPANY

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Kansas City 1, Mo.

**Kansas City, Mo. Member of A. W. I.**

## KANSAS CITY TERMINAL WAREHOUSE CO.

STORAGE AND DISTRIBUTION  
500,000 SQUARE FEET...  
AMPLE COVERED TRUCK DOCKS  
ST. LOUIS AVE. & MULBERRY ST.

For Shippers' Convenience, States, Cities

**KANSAS CITY, MO.**

For **Good** Warehousing in **Kansas City**

Call **G-K** Warehouses, Inc.

Complete Bonded Service with Extensive Facilities  
Kansas Ave. and Railroad St., Kansas City 5, Kansas  
Represented by Affiliated Warehouse Companies

**KANSAS CITY, MO.**

## COMPLETE WAREHOUSE FACILITIES

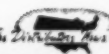


for the proper Storage  
and Distribution of your  
Merchandise in the Kansas City trade area.

## POOL CAR DISTRIBUTION

We invite your Inquiries

CHICAGO 8  
224 S. Michigan Ave. The Merchants Trust Bldg.  
W.A. 2-7647



ALLIED DISTRIBUTION, INC.  
NEW YORK 18  
11 WEST 42nd ST.  
Room 6-0967

## MIDWEST TERMINAL WAREHOUSE CO.

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Owned and Operated by the ST. LOUIS TERMINAL WAREHOUSE CO., ST. LOUIS, MO.

**ST. LOUIS, MO.**

## DISTRIBUTORS WAREHOUSE

INCORPORATED

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## GENERAL MERCHANDISE STORAGE

Pool Car Distribution  
Legal Liability Insurance  
Low Insurance Rates  
ADT Protection — Telephone Main 1-9571



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*Space with Service*  
*-you'll find it at Long Warehouse*

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STRATEGIC, BOOMING MIDWEST

USE  
**LONG SERVICE**  
*from shipper to market*

- Long-time employees • Long-time accounts
- Long-time know-how
- It all adds up to...  
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ST. LOUIS... The City Surrounded by the United States  
LONGEST ESTABLISHED MERCHANDISE WAREHOUSE IN ST. LOUIS  
UNDER CONTINUOUS AND IDENTICAL OPERATION

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ALL FACILITIES FOR  
COMPLETE SERVICE

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- Complete Warehouse Service
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  - 400,000 Legal Liability
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  - Burglar & Sprinkler protection
- "Compare Service—Cost and Facilities"

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# RUTGER STREET WAREHOUSE, INC.

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A.D.T. Burglar & Sprinkler Alarms  
200,000 Sq. Feet of Space  
BONDED

Track Connections with All  
Rail and River Lines

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Murray Hill 9-7645

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ST. LOUIS, MO.



"Serving industry for  
more than 30 years"

**OVER 1,000,000 Sq. Ft.  
of WAREHOUSE Space**

Located right in the midst of business

**Plus FAST**

**and EFFICIENT DISTRIBUTION  
in the ST. LOUIS AREA**

**Call Us Collect for Rates and Information**

*Complete Facilities*



Pool car distribution  
Reforwarding storage in transit  
A.D.T. Alarms and sprinkler systems  
Traffic and legal depts. Bonded employees

# ST. LOUIS TERMINAL WAREHOUSE CO.

General Offices • 826 Clark Ave. • St. Louis 2, Mo. • MAIN 1-4927



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Harrison 7-3688

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Plaza 3-1235

Member **AMERICAN WAREHOUSEMEN'S ASSOCIATION**

ST. LOUIS, MO.

PROSPECT 2-2676

# WAREHOUSING CORPORATION

of Missouri, Inc.

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**General Merchandise & Cold Storage**

Ideal for Candy—Dried Fruit and other items requiring cool room Storage. Pool Car Distributing and Forwarding Service. A. D. T. Burglar and Sprinkler Alarms. Bonded. Served by Missouri Pacific & Frisco RR. Available fleet of Modern Trucks. ample car loading sidings. Large Covered Truck Dock.

ST. LOUIS, MO.

Established 1912



# TYLER

**Warehouse &  
Cold Storage Co.**

The only Cold Storage  
in the U. S. equipped  
with patented auto-  
matic, temperature and  
humidity controls.

Insurance rates  
of 16.2 per \$100

Members of A.W.A.,  
Mo.W.A., St.L.M.W.A.

**Sprinkler & Burglary  
Protection**

SATISFIED  
NATIONAL DISTRIBUTORS  
FROM COAST TO COAST  
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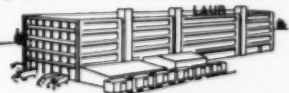
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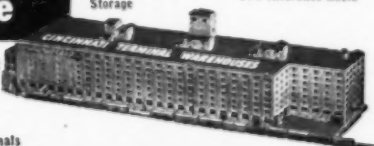
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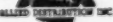
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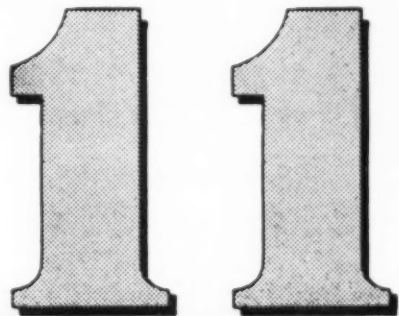
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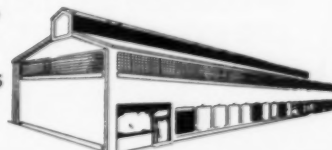
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POOL CAR DISTRIBUTION & STORAGE IN TRANSIT  
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**COMPLETE WAREHOUSE FACILITIES**

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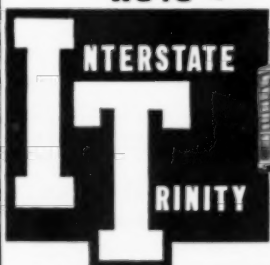
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A COMPLETE WAREHOUSE & DISTRIBUTION SERVICE

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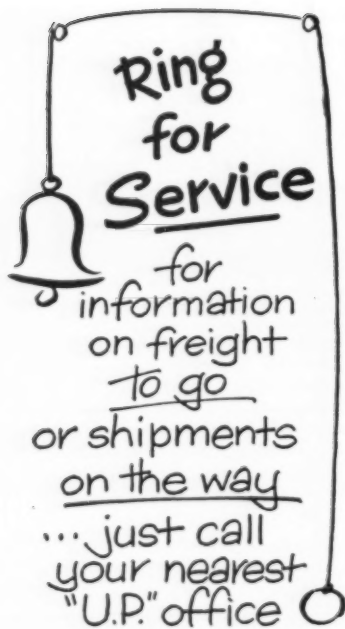
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### FOR LEASE

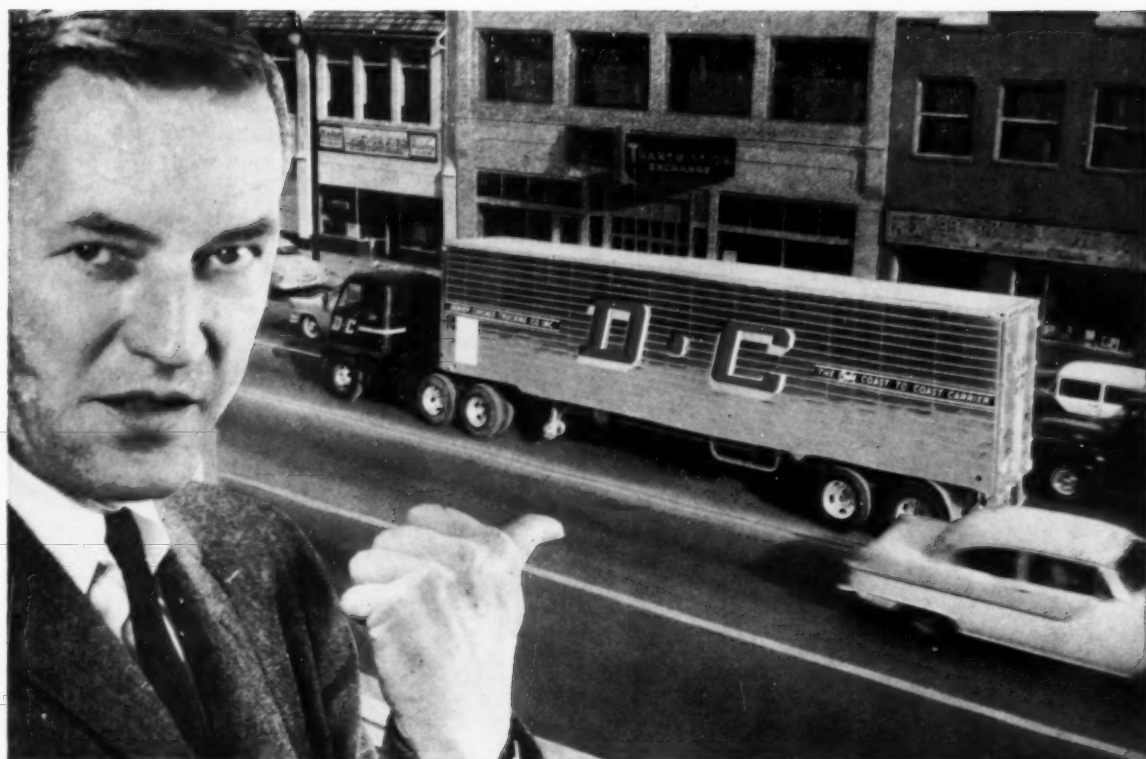
**WAREHOUSE FOR LEASE**—Portland, Ore., in heart of central distribution and wholesale district. Top condition; 53,000 sq ft. Solid concrete construction. 13,000 sq ft on ground floor. On rail spur track, arterial street. Floor load up to 475 lb per sq ft. Elevator takes lift trucks and pallets. R. D. MOORES, 200 Woodlark Bldg., Portland, Ore.

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Traffic Managers Coast-to-Coast are saying:  
*"I Always Specify D-C Because..."*

- **D-C IS FASTER**—One-carrier direct service from coast-to-coast. 2-man sleeper cabs go straight-thru with no transloading—cuts 20% off running time.
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| Chicago, Illinois...LA 3-7440   | New York, New York...LO 4-3320  |
| Cleveland, Ohio...SH 9-1666     | (N. Bergen, N. J.)...UN 3-0900  |
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| Denver, Colorado...DU 8-4567    | Phoenix, Arizona...AL 8-5321    |
| Detroit, Michigan...VI 3-9505   | Pueblo, Colorado...LI 3-4425    |
| Evansville, Indiana...MA 3-6487 | St. Louis, Missouri...CH 1-7830 |
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\*With Trailer Pool

\*\*Trailer Pool Only

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THE ONLY COAST-TO-COAST CARRIER

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Now in 2,000 and 3,000 lb. capacity\* (based on 48" long load)

*Check for yourself—no other truck with a collapsed height of 68" can lift 144"*

The Sky-hi-lift—teamed with Automatic's battery-powered, stand-up, end-controlled Docker—is the answer to a highly efficient, highly mechanized warehouse operation. You get all the advantages of the Docker's versatility and maneuverability, plus these exclusive Sky-hi-lift features:

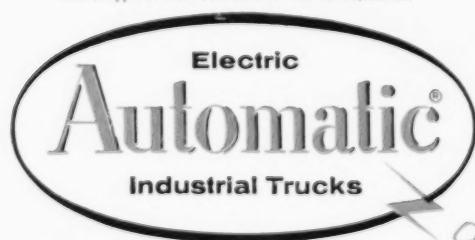
**High 144" Lift...**To take advantage of your high bays; increases warehouse capacity a full third.

**Low 68" Mast...**Lets you load and unload trucks, trailers, rail cars, and enter low-door elevators.

**2,000 and 3,000 lb. capacity...**the right weight for entering trailers without fear of going through the floor.

In short, mount the Sky-hi-lift on a Docker and you get one truck that does the job of two—with no need to transfer loads. Also available for other Automatic trucks. Write today for information on how the Sky-hi-lift can help you squeeze more profit out of existing space; and ask about convenient lease and purchase terms.

\*Similar type of mast available for heavier capacities.



**WORLD'S LARGEST EXCLUSIVE BUILDER OF ELECTRIC-DRIVEN INDUSTRIAL TRUCKS**

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Division of The Yale & Towne Manufacturing Company

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*Cost less to own... less to operate*